



Revised Flora and List of Threatened and Endangered Plants for the John F. Kennedy Space Center Area, Florida

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Table of Contents

Section	Page
Abstract	3
List of Tables	4
List of Figures	4
Acknowledgments	4
Introduction	5
Methods	7
Results	9
Discussion	10
Summary	24
Literature Cited	26
Appendix I. Vascular flora of the Kennedy Space Center area.	31
Appendix II. Introduced plants in the Kennedy Space Center area flora.	62
Appendix III. Plants endemic or nearly endemic to Florida occurring in the Kennedy Space Center area.	71
Appendix IV. Bryophytes of the Kennedy Space Center area.	74

Abstract

The vascular flora of the Kennedy Space Center (KSC) area was first studied in the 1970's (Sweet 1976, Poppleton et al. 1977), and the list was revised in 1990 (Schmalzer and Hinkle 1990). Nomenclatural and taxonomic changes as well as additional collections required a new revision of this list. The revised list includes 1024 taxa of which 803 are native and 221 are introduced. This appears to be a substantial proportion of the regional flora. Fifty taxa are endemic or nearly endemic to Florida, a level of endemism that appears high for the east coast of Florida. Of the 221 introduced plants, twenty-six are Category I invasive exotics and fifteen are Category II invasive exotics. Thirty-eight taxa are listed as threatened, endangered, or of special concern on state lists. For some of these taxa, populations on KSC appear to be important for their regional and global survival. The bryophyte flora of the KSC area include 23 mosses and 20 liverworts and hornworts (Whittier and Miller 1976). The lichen flora is currently unknown.

List of Tables

	Page
Table 1. Status of the endangered and threatened plants of the Kennedy Space Center area.	11
Table 2. Common habitats of the endangered and threatened plants of the Kennedy Space Center area.	16

List of Figures

	Page
Figure 1. Locations of selected sensitive species in the Kennedy Space Center area.	20

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Introduction

The vascular flora of an area is a basic component of its biological diversity and an important consideration for environmental planning and impact assessment. In this report, we provide an updated and revised floristic list for the Kennedy Space Center area. We discuss those species listed as threatened or endangered under state or federal laws or regulations.

Floristic Lists

The first vascular floristic list for Kennedy Space Center (KSC) was prepared by botanists from the University of Central Florida (UCF) (Sweet 1976, Poppleton et al. 1977). It was based on collections primarily from northern Merritt Island (from Banana Creek to Haulover Canal) but also included plants from "excursions to the southern point of the Cape (Sebastian Inlet)" (Sweet 1976). The list published in the *Florida Scientist* included "all of coastal Brevard County east of the Indian River, and that portion of Volusia County included in the recently created Canaveral National Seashore" (Poppleton et al. 1977). Neither list corresponded exactly to the political boundaries of KSC.

In 1990, we revised the floristic list (Schmalzer and Hinkle 1990) based on additional vegetation and floristic studies (e.g., Breininger and Schmalzer 1990, Schmalzer and Hinkle 1987, Schmalzer et al. 1991) and new manuals and references treating all or part of the central Florida flora (Cronquist 1980, Godfrey and Wooten 1979, 1981; Wunderlin 1982, Wunderlin et al. 1985, 1988; Lellinger 1985).

Since then several manuals treating all or part of the vascular flora of Florida have appeared (Isely 1990, Flora of North America Editorial Committee 1993, 1997,

2000; Wunderlin 1998, Wundelin and Hansen 2000). Additional vegetation and floristic studies have been conducted (Johnson et al. 1990, Schmalzer and Hinkle 1992, Johnson 1993, Chafin et al. 1996, Schmalzer and Oddy 1995, Schmalzer et al. 1999, 2002; Schmalzer and Adrian 2001). Therefore, a new revision of the KSC floristic list is required.

Bryophytes of the KSC area are known from the work of Whittier and Miller (1976). No subsequent additions or changes to this list are known, but it is included here so that available floristic information is centralized.

Threatened and Endangered Plants

The environmental impact statement for KSC (NASA 1979) provided the first list of threatened and endangered plants for the site; 11 taxa (*Acrostichum aureum*, *Annona glabra*, *Avicennia germinans*, *Asclepias curtissii*, *Chrysophyllum oliviforme*, *Drosera intermedia*, *Ophioglossum palmatum*, *Peperomia obtusifolia*, *Rhizophora mangle*, *Tournefortia gnaphalodes*, *Zamia integrifolia*) were listed. Poppleton (1981) provided information on 12 taxa (*Asclepias curtissii*, *Calamovilfa curtissii*, *Cereus erioiphorus* var. *fragrans*, *Chrsophyllum oliviforme*, *Hymenocallis latifolia*, *Lechea cernua*, *Ophioglossum palmatum*, *Persea borbonia* var. *humilis*, *Rhynchosia cinerea*, *Verbena maritima*, *Verbena tampensis*, *Zamia umbrosa*) then proposed for federal listing under the Endangered Species Act and two taxa (*Avicennia germinans*, *Rhizophora mangle*) of special interest in Florida (Ward 1978). Schmalzer and Hinkle (1985) included taxa listed by the state of Florida as well as those under review by the U.S. Fish and Wildlife Service; this list contained 60 taxa. In 1990, 73 taxa in the KSC flora were listed by state or federal agencies (Schmalzer and Hinkle 1990). As information on the

population status and threats to rare plants accumulates, agencies revise their lists of species of concern by adding taxa not previously listed, removing taxa shown to be more common than previously thought, and changing categories. Florida state lists have changed significantly in recent years (Coile 1996, 1998, 2000; Marois 1997). In addition, the U.S. Fish and Wildlife Service no longer maintains a list of Category 1 or 2 species; these categories previously indicated species that were under review but for which comprehensive data were lacking. Therefore, the list of threatened and endangered plants for KSC also required revision.

Methods

Floristic List

In 1990, the original floristic list of Sweet (1976) with additions and corrections of Poppleton et al. (1977) and Poppleton (1981) was compared to nomenclature of Wunderlin (1982), Wunderlin et al. (1985, 1988), Godfrey and Wooten (1979, 1981), Cronquist (1980), and Lellinger (1985). In addition, Hitchcock and Chase (1950), Bailey (1949), and Luer (1972) were consulted for certain groups. In the present revision, we compared the 1990 list (Schmalzer and Hinkle 1990) to Wunderlin (1998) and Wunderlin and Hansen (2000) and consulted treatments in the Flora of North America (Flora of North America Editorial Committee 1993, 1997, 2000). Nomenclature follows Wunderlin (1998) except in a few cases where the treatment in the Flora of North America was used. The nomenclature for some introduced plants not in Wunderlin (1998) follows Bailey (1949).

Examination of taxonomic monographs on all the groups represented in this flora was beyond the extent of the present effort. The specimens on which the original floristic list was based are housed at the UCF Herbarium (Sweet 1976, Poppleton et al. 1977); these specimens were not examined for this revision.

Some species were eliminated when it was clear they had been misidentified. More frequent were name changes or varieties or species now reduced to synonymy. We added additional species from fieldwork conducted since 1990.

Introduced and Endemic Plants

We examined the revised species list to determine which species were introduced (non-native) by comparing to comments in Wunderlin (1998) or to other manuals for species not listed there. We considered species to be native to the KSC area if they were native to central Florida. For introduced species, we examined the list of invasive species (Florida Exotic Pest Plant Council 2001) to determine if they were considered invasive. There are two categories maintained by the Florida Exotic Pest Plant Council. Category I includes invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives; Category II includes invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species.

We compared the revised floristic list to the list of vascular plants endemic to Florida of Muller et al. (1989) and to comments in Wunderlin (1998) to determine taxa endemic to Florida occurring in the KSC area. The categories used were those of Muller

et al. (1989): endemic to Florida, nearly endemic to Florida (range exceeds Florida's boundaries by < 10%), and not endemic.

Threatened and Endangered Plants

We compared the revised floristic list to the most recent lists of endangered and threatened plants of Florida (Marois 1997, Coile 2000). We also compiled available information on population status, habitat, and threats to existence for the listed taxa.

Spatial location information was available for certain species (Popperton 1981, Johnson 1993, Chafin et al. 1996, Schmalzer unpublished). Some of these species are no longer considered rare enough to justify listing. For *Calamovilfa curtissii*, *Chamaesyce cumulicola*, *Glandularia* (= *Verbena*) *maritima*, *Glandularia* (= *Verbena*) *tampensis*, *Lantana depressa* var. *floridana*, *Lechea cernua*, *Lechea divaricata*, *Ophioglossum palmatum*, and *Persea borbonia* var. *humilis*, the plant locations were screen digitized on digital orthophoto quadrangles (DOQ) following the written field descriptions. Point features were added to a GIS coverage with genus, species, and rank information appended as attributes of the spatial locations.

Results

Floristic Lists

The revised vascular floristic list includes 1024 taxa of vascular plants (Appendix I). Of this flora, 221 taxa (21.6%) are introduced (Appendix II) and 803 are native. Twenty-six Category I invasive exotic plants and fifteen Category II invasive exotic plants occur (Appendix II). Fifty of the native taxa (6.2%) are endemic to Florida (Appendix III).

Bryophytes of the KSC area include 43 taxa, 23 mosses (Musci) and 20 liverworts and hornworts (Hepaticae and Anthocerotae) (Whittier and Miller 1976) (Appendix IV).

Threatened and Endangered Plants

Thirty-eight taxa (Table 1) are listed as threatened, endangered, or of special concern by the Florida Department of Agriculture and Consumer Services (Coile 2000), Florida Natural Areas Inventory (Marois 1997), or Florida Committee on Rare and Endangered Plants and Animals (Ward 1978). Endangered and threatened plants occur in various habitats including coastal dunes, coastal strand, scrub, pine flatwoods, hammocks, hardwood swamps, marshes, and mangrove swamps (Table 2). Species occur in various geographical locations throughout the area (Figure 1). Detailed information on locations and population status of these taxa is available only for those studied by Poppleton (1981), Johnson (1993), Chafin et al. (1996), or encountered in fieldwork related to long-term environmental monitoring and research at KSC.

Discussion

Floristic List

The KSC area supports a large vascular flora with elements of temperate distribution some of which approach the southern edge of their distribution and plants of subtropical distribution at or near the northern edge of their distribution. The number reported here (1024) is less than that (1045) reported in 1990 (Schmalzer and Hinkle 1990). The reduction is due to varieties or species reduced to synonymy by taxonomic revisions or to species excluded that were misidentified previously or appear to be out of range. Future work will result in other changes to the list. There have been additions

Table 1. Status of endangered and threatened plants of the Kennedy Space Center Area.

Scientific Name	Common Name	Designated Status ¹			
		USFWS ²	FDA ³	FCREPA ⁴	FNAI ⁵
<i>Amyris balsamifera</i>	Balsam torchwood				G4, S2
<i>Asclepias curtissii</i> ^{6, 8, 9}	Curtiss milkweed		E		G3, S3
<i>Avicennia germinans</i> ^{6, 7, 8}	Black mangrove			SP	
<i>Calamovilfa curtissii</i> ^{6, 7}	Curtiss reedgrass	FC2	T		G1G2,S1S2
<i>Calopogon multiflorus</i>	Many-flowered grass pink		E		
<i>Chamaesyce cumulicola</i> ⁹	Sand dune spurge	FC2	E		G2,S2
<i>Chrysophyllum oliviforme</i> ^{6, 7, 9}	Satinleaf		T		
<i>Encyclia tampensis</i>	Butterfly orchid		C		
<i>Epidendrum canopseum</i>	Greenfly orchid		C		
<i>Harrisella filiformis</i>	Threadroot orchid		T		
<i>Hexalectris spicata</i>	Crested coralroot		E		
<i>Lantana depressa</i> var. <i>floridana</i> ^{7, 9}	East coast lantana	FC2	E		G2T2, S2
<i>Lechea cernua</i> ^{6, 9}	Nodding pinweed	FC2	T		G3, S3
<i>Lechea divaricata</i> ⁷	Pine pinweed	FC2	E		G2, S2
<i>Lilium catesbaei</i>	Catesby lily		T		G4, S3
<i>Myrcianthes fragrans</i> ⁷	Nakedwood	FC2	T		G4T3, S3
<i>Ophioglossum palmatum</i> ^{6, 8, 9} (= <i>Cheiroglossa palmata</i>)	Hand fern		E	E	G5, S2
<i>Opuntia stricta</i> ⁷	Shell mound prickly-pear		T		
<i>Osmunda cinnamomea</i> ⁷	Cinnamon fern		C		
<i>Osmunda regalis</i> var. <i>spectabilis</i> ⁷	Royal fern		C		
<i>Pavonia spinifex</i> ⁹	Yellow hibiscus				G4G5, S2S3

Table 1. (continued).

Scientific Name	Common Name	USFWS	FDA	FCREPA	FNAI
<i>Peclumula plumula</i> (= <i>Polypodium plumula</i>)	Plume polypody		E		
<i>Peperomia humilis</i>	Peperomia		E		G5, S2
<i>Peperomia obtusifolia</i> ⁸	Florida peperomia		E		G5, S2
<i>Persea borbonia</i> var. <i>humilis</i> ^{6, 7}	Scrub bay				G3, S3
<i>Pogonia ophioglossoides</i>	Rose pogonia		T		
<i>Pteroglossaspis ecristata</i> (= <i>Eulophia ecristata</i>)	False coco		T		G2G3, S2
<i>Remirea maritima</i> ^{7, 9, 10} (= <i>Cyperus pedunculatus</i>)	Beach-star		E		
<i>Rhizophora mangle</i> ^{6, 7, 8}	Red mangrove			SP	
<i>Scaevola plumieri</i> ^{7, 10}	Scaevola		T		
<i>Sophora tomentosa</i>	Necklace pod				G4, S3
<i>Spiranthes laciniata</i>	Lace-lip ladies'-tresses		T		
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Narrow-leaved hoary pea; coastal hoary pea	FC2	E		G1T1, S1
<i>Tillandsia utriculata</i>	Giant wild pine; giant air plant		E		
<i>Tournefortia gnaphalodes</i> ⁸ (= <i>Argusia gnaphalodes</i>)	Sea lavender		E	T	G4, S3
<i>Verbena maritima</i> ^{6, 7, 9} (= <i>Glandularia maritima</i>)	Coastal vervain	FC2	E		G2, S2
<i>Verbena tampensis</i> ^{6, 7} (= <i>Glandularia tampensis</i>)	Tampa vervain	FC1	E		G1, S1
<i>Zamia umbrosa</i> ^{6, 8} (= <i>Zamia pumila</i>)	East coast coontie		C	T	

Table 1 (continued).

	USFWS	FDA	FCREPA	FNAI
TOTALS	FC1-1 FC2-8 9	E-16 T-11 C-5 32	E-1 T-2 SP-2 5	20
GRAND TOTAL-38				

¹ E = Endangered
T = Threatened
SP = Special Concern
C = Commercially Exploited

² United States Fish and Wildlife Service. FC1 and FC2 indicate species that were formerly under consideration for listing.

³ Florida Department of Agriculture and Consumer Services (Coile 2000).

⁴ Florida Committee on Rare and Endangered Plants and Animals (Ward 1978).

Table 1 (continued).

⁵ Florida Natural Areas Inventory (Marois 1997). FNAI assigns two ranks for each element. The global element rank is based on an element's worldwide status; the state element rank is based on the status of the element in Florida. Element ranks are based on factors including estimated number of element occurrences, estimated abundance, range, estimated adequately protected element occurrences, relative threat of destruction, and ecological fragility.

Global Element Rank:

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some biological or man-made factor.

G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals), or found locally in a restricted range, or vulnerable to extinction because of other factors.

G4 = Apparently secure globally (may be rare in parts of range)

G5 = Demonstrably secure globally

G#T# = Rank of taxonomic subgroup such as subspecies or variety; numbers have same definition as above

State Element Rank:

Definitions parallel global element ranks: substitute "S" for "G" in global ranks, and "in state" for "globally" in global rank definitions.

Table 1 (continued).

⁶ Sites or populations identified by Poppleton (1981)

⁷ Sites or populations known from Kennedy Space Center Ecological Program work (1982-2002)

⁸ Listed in Final Environmental Impact Statement for Kennedy Space Center (NASA 1979)

⁹ Cape Canaveral Air Force Station sites or populations identified by Chafin et al. (1996)

¹⁰ Cape Canaveral Air Force Station sites or populations identified by Schmalzer and Oddy (1995)

Table 2. Common habitats of endangered and threatened plants of the Kennedy Space Center Area.

Scientific Name	Common Name	Habitat	Population Status	Threats to Existence
<i>Amyris balsamifera</i>	Balsam torchwood	Coastal hammock	Unknown	Habitat loss
<i>Asclepias curtissii</i> ^{1, 3}	Curtiss milkweed	Oak scrub	Two small population	Habitat loss, fire exclusion
<i>Avicennia germinans</i>	Black mangrove	Mangrove swamps	Common within habitat	Habitat loss, freezes
<i>Calamovilfa curtissii</i> ^{1, 2}	Curtiss reedgrass	Shallow swales in pine flatwoods	Several populations	Habitat loss, fire exclusion
<i>Calopogon multiflorus</i>	Many-flowered grass	Pine flatwoods	Unknown	Habitat loss
<i>Chamaesyce cumulicola</i> ³	Sand dune spurge	Coastal dunes, strand and scrub	Several small populations	Habitat loss, fire exclusion
<i>Chrysophyllum oliviforme</i> ^{1, 3}	Satinleaf	Hammocks	Unknown	Habitat loss
<i>Encyclia tampensis</i>	Butterfly orchid	Hammocks, hardwood swamps - epiphytic	Unknown	Habitat loss
<i>Epidendrum canopseum</i>	Greenfly orchid	Hammocks, hardwood swamps - epiphytic	Unknown	Habitat loss
<i>Harrisella filiformis</i>	Threadroot orchid	Hardwood swamps - epiphytic	Unknown	Habitat loss
<i>Hexalectris spicata</i>	Crested coralroot	Hammocks	Unknown	Habitat loss

Table 2. (continued).

Scientific Name	Common Name	Habitat	Population Status	Threats to Existence
<i>Lantana depressa</i> var. <i>floridana</i> ^{2, 3}	East coast lantana	Coastal strand and scrub	Several small populations	Habitat loss, hybridization with <i>L. camara</i>
<i>Lechea cernua</i> ^{1, 3}	Nodding pinweed	Scrub openings	Two populations	Habitat loss, fire exclusion
<i>Lechea divaricata</i> ²	Pine pinweed	Scrub openings	Two small populations	Habitat loss, fire exclusion
<i>Lilium catesbaei</i>	Catesby lily	Pine flatwoods	Unknown	Habitat loss
<i>Myrcianthes fragrans</i> ¹	Nakedwood	Hammocks, coastal strand	Common within habitat	Habitat loss
<i>Ophioglossum palmatum</i> ^{1, 3} (= <i>Cheiroglossa palmata</i>)	Hand fern	Hammocks - epiphytic on cabbage palm	3 historic, 2 extant populations	Habitat loss, freezes
<i>Opuntia stricta</i> ²	Shell mound prickly-pear	Coastal dunes and strand	Common within habitat	Habitat loss, introduced insect
<i>Osmunda cinnamomea</i> ²	Cinnamon fern	Hardwood swamps	Common within habitat	Habitat loss
<i>Osmunda regalis</i> var. <i>spectabilis</i> ²	Royal fern	Hardwood swamps	Common within habitat	Habitat loss
<i>Pavonia spinifex</i> ³	Yellow hibiscus	Hammocks	Two populations	Unknown
<i>Peclumula plumula</i> (= <i>Polypodium plumula</i>)	Plume polypody	Hammocks - epiphytic	Unknown	Habitat loss
<i>Peperomia humilis</i>	Peperomia	Hammocks	Unknown	Habitat loss
<i>Peperomia obtusifolia</i>	Florida peperomia	Hammocks - epiphytic	Unknown	Habitat loss
<i>Persea borbonia</i> var. <i>humilis</i> ^{1, 2}	Scrub bay	Scrub	A few small populations	Habitat loss, fire exclusion

Table 2. (continued).

Scientific Name	Common Name	Habitat	Population Status	Threats to Existence
<i>Pogonia ophioglossoides</i>	Rose pogonia	Marshes and wet pine flatwoods	Unknown	Habitat loss
<i>Pteroglossaspis ecristata</i> (= <i>Eulophia ecristata</i>)	False coco	Scrub and dry flatwoods	Unknown	Habitat loss
<i>Remirea maritima</i> ^{2, 3} (= <i>Cyperus pedunculatus</i>)	Beach-star	Coastal dunes	Occasional within habitat	Habitat loss
<i>Rhizophora mangle</i> ²	Red mangrove	Mangrove swamps	Occasional within habitat	Habitat loss, freezes
<i>Scaevola plumieri</i> ²	Scaevola	Coastal dunes and strand	Occasional within habitat	Habitat loss
<i>Sophora tomentosa</i>	Necklace pod	Coastal strand and hammocks	Unknown	Habitat loss
<i>Spiranthes laciniata</i>	Lace-lip ladies'-tresses	Marshes	Unknown	Habitat loss
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Narrow-leaved hoary pea; coastal hoary pea	Coastal dunes and strand	Unknown	Habitat loss
<i>Tillandsia utriculata</i>	Giant wild pine; giant air plant	Hammocks and hardwood swamps - epiphytic	Unknown	Exotic insect, habitat loss
<i>Tournefortia gnaphalodes</i> (= <i>Argusia gnaphalodes</i>)	Sea lavender	Coastal dunes	Possibly extirpated	Habitat loss, freezes

Table 2 (continued).

Scientific Name	Common Name	Habitat	Population Status	Threats to Existence
<i>Verbena maritima</i> ^{1, 2, 3} (= <i>Glandularia maritima</i>)	Coastal vervain	Coastal dunes and strand - openings	Common within habitat	Habitat loss
<i>Verbena tampensis</i> ^{1, 2} (= <i>Glandularia tampensis</i>)	Tampa vervain	Edge of hammocks	A few small populations	Habitat loss
<i>Zamia umbrosa</i> ¹ (= <i>Zamia pumila</i>)	East coast coontie	Hammocks	Ca. 100 plants	Habitat loss, collection

¹ Sites or populations identified by Poppleton (1981)

² Sites or populations identified by Kennedy Space Center Ecological Program (1982-2002) (Schmalzer and Hinkle 1990, Schmalzer et al. 1999, Schmalzer unpublished)

³ Sites or populations identified by Chafin et al. (1996)

Sensitive Plants on KSC, CCAFS, and CNS



Figure 1. Locations of selected sensitive species in the Kennedy Space Center area.

to the list as well. Some of these are native species (e.g., *Chamaesyce cumulicola*, *Lechea divaricata*) identified by new collections. Other additions (e.g., *Lygodium microphyllum*, *Senna pendula* var. *glabrata*) are invasive exotics whose ranges have expanded into the KSC area.

The KSC area flora exceeds that reported by Herwitz and Wunderlin (1990) for Cayo-Costa and Sanibel Islands in southwest Florida. The Merritt Island-Cape Canaveral barrier island complex has greater area than those islands. In addition, the northern portion of Merritt Island connects to the mainland and is not truly insular. Both of these factors would be expected to increase the size of the flora.

We term this flora as being of the KSC area deliberately. Not all these species may occur within the political boundaries of the Space Center or on adjacent federal properties (Cape Canaveral Air Force Station, Canaveral National Seashore). Location information from the herbarium specimens on which the list was based would have to be added to the database in order to determine occurrence within these boundaries.

There is a substantial introduced element to the flora. This appears to be related in part to past disturbance from agricultural activities, old home sites, and other landscape modifications. Only some of these species have become naturalized. Forty-one of these exotic species are considered invasive (26-Category I, 15 Category II). *Schinus terebinthifolius* (Brazilian pepper) is most prominent on the KSC landscape, but *Casuarina* cf. *equisetifolia* (Australian pine) and *Melaleuca quinquenervia* are locally abundant. These three species are among the most common and damaging invasive exotic plants in Florida (Schmitz et al. 1997). Although *Imperata cylindrica* (cogongrass) was recorded on KSC in the original floristic surveys, recently it has

spread into sites where it had not previously occurred. Cogongrass has the potential to invade upland communities and disrupt natural fire regimes (Lippincott 2000). Also of concern is the appearance of two new invasive species on the KSC landscape:

Lygodium microphyllum (Old World climbing fern) and *Senna pendula* var. *glabrata* (valamuerto). Old world climbing fern is well established in south Florida and can cover native trees (Schmitz et al. 1997).

The number of taxa endemic or near endemic to Florida (50) reported here is higher than expected from Muller et al. (1989). The flora of the east coast of Florida is considered lower in endemics than the southern tip of the peninsula, the Central Ridge, or the lower Apalachicola River Basin (Muller et al. 1989); the data for KSC agree with the suggestion that coastal Florida be considered a fourth region of endemism within the state.

The lichen flora of KSC does not appear to have been studied. Two lichens are listed by the Florida Natural Areas Inventory (Marois 1997), and one (*Cladonia perforata*) is listed as endangered (Coile 2000). Brevard County, however, is not within the known range of this lichen. Thompson (1989) noted many rare lichens in an outlier of pine-oak scrub in Georgia. Frequent fire negatively impacts lichens and other cryptograms which recover slowly (Miller 1990).

Threatened and Endangered Plants

The number (38) of threatened and endangered plants has decreased from the last comprehensive list (Schmalzer and Hinkle 1990). The decreases are mainly from changes in state lists of species of concern. Some species on previous lists for KSC are no longer included. *Conradina grandiflora* occurs on the mainland of Brevard

County (Schmalzer et al. 1999) but years of fieldwork in scrub indicate that it is absent from Merritt Island and Cape Canaveral. *Cereus eriphorus* var. *fragrans* (now *Harrisia fragrans*) was reported from KSC (Poppleton 1981) based on a misidentification (Ann Johnson, FNAI, personal communication). *Cereus gracilis* var. *simpsonii* (now *Harrisia simpsonii*) once occurred at Turtle Mound (Norman 1976) but was eliminated by freezes (Norman and Hawley 1995) and now reaches its northern limits in south Brevard County (Johnson et al. 1990, Schmalzer et al. 1999). The status of some other species is uncertain. Poppleton (1981) reported that the one known population of *Tournefortia* (= *Argusia*) *gnaphalodes* was eliminated by a freeze in 1977.

Endangered and threatened plants occur in various habitats including coastal dunes, coastal strand, scrub, pine flatwoods, hammocks, hardwood swamps, marshes, and mangrove swamps. It is evident that hammocks and hardwood swamps have a high concentration of threatened and endangered plants, especially since these communities make up a relatively small proportion of the total vegetation of KSC (Provanch et al. 1986). Whittier and Miller (1976) noted the importance of hammocks to the bryophyte flora.

Detailed information on locations and population status of listed taxa is available only for those studied by Poppleton (1981), Johnson (1993), Chafin et al. (1996), or encountered in fieldwork related to long-term environmental monitoring and research at KSC. For most of these plants, there are insufficient data to determine how important KSC is to their regional or global survival. The protected areas within KSC and adjacent federal properties are important remaining habitat for native flora within the area. For *Calamovilfa curtissii* (Curtiss's reedgrass), KSC supports the largest populations in

public ownership and nearly the only confirmed populations on the east coast of Florida (Johnson and Blyth 1988, Johnson 1993); other known populations are in the Florida panhandle. Thus, proper management of areas containing this grass are important to its survival.

The major threat to the continued existence of most of these endangered and threatened plants throughout their range is habitat destruction. Several other threats exist. Many hammock species, especially epiphytes, are sensitive to fire. On the other hand, some scrub and flatwood species decline if fire is excluded for too long from those communities. Collection of horticulturally interesting plants such as orchids, bromeliads, and *Ophioglossum palmatum* (hand fern) is a problem in some parts of the state and could occur on KSC outside of the security zone. Rooting by feral hogs is a threat to terrestrial herbs, especially those of hammocks, but the extent of hog damage to these species locally is not known. Invasion of exotic plants, for example Brazilian pepper, displaces native species from hammocks and marshes.

Summary

1. The vascular flora of the Kennedy Space Center area is approximately 1024 species of which 803 are native and 221 are introduced. This appears to be a substantial fraction of the regional flora. Additional work is needed to incorporate location information on occurrences of these species into the database.
2. Fifty taxa in the KSC area vascular flora are endemic to Florida. Thirty-eight taxa are listed on state lists of threatened and endangered plants. For many of the listed taxa, current information is needed on location and population status. For

some taxa (e.g., *Calamovilfa curtissii*), populations within KSC appear important to their regional and global survival.

3. The bryophyte flora consists of 43 taxa, 23 mosses and 20 liverworts and hornworts. The lichen flora is currently unknown. Since rarity among lichens is now being recognized, consideration should be given to documenting the lichen flora.

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Appendix I. Vascular flora of the Kennedy Space Center area.

Class ¹	Family	Genus	Species	Variety	Authority
p	Aspleniaceae	Asplenium	platyneuron		(L.) BSP.
p	Azollaceae	Azolla	caroliniana		Willd.
p	Blechnaceae	Blechnum	serrulatum		L. C. Rich.
p	Blechnaceae	Woodwardia	areolata		(L.) Moore
p	Blechnaceae	Woodwardia	virginica		(L.) Smith
p	Dennstaedtiaceae	Pteridium	aquilinum		(L.) Kuhn
p	Dryopteridaceae	Dryopteris	ludoviciana		(Kunze) Small
p	Lycopodiaceae	Lycopodiella	alopeuroides		(L.) Cranfill
p	Lycopodiaceae	Lycopodiella	appressum		(Chapm.) Cranfill
p	Lycopodiaceae	Lycopodiella	caroliniana		(L.) Pic. Serm.
p	Nephrolepidaceae	Nephrolepis	biserrata		(Sw.) Schott
p	Nephrolepidaceae	Nephrolepis	cordifolia		(L.) Presl
p	Nephrolepidaceae	Nephrolepis	exaltata		(L.) Schott
p	Ophioglossaceae	Ophioglossum	palmatum		L.
p	Ophioglossaceae	Ophioglossum	petiolatum		Hook.
p	Osmundaceae	Osmunda	cinnamomea		L.
p	Osmundaceae	Osmunda	regalis L.	var. spectabilis	(Willd.) A. Gray
p	Polypodiaceae	Campyloneurum	phyllitidis		(L.) Presl
p	Polypodiaceae	Pecluma	plumula		(Humb. & Bonpl. ex Willd.) Price
p	Polypodiaceae	Phlebodium	aureum		(L.) Small
p	Polypodiaceae	Pleopeltis	polypodioides (L.) Andrews & Windham	var. michauxianum	(Weatherby) Andrews & Windham
p	Psilotaceae	Psilotum	nudum		(L.) Beauv.
p	Pteridaceae	Acrostichum	danaeifolium		Langsd. & Fisch.
p	Salvinaceae	Salvinia	minima		Baker
p	Schizaeaceae	Lygodium	microphyllum		(Cav.) R. Br.
p	Selaginellaceae	Selaginella	arenicola		Underw.
p	Thelypteridaceae	Thelypteris	hispidula (Dcne.) Reed	var. versicolor	(R. St. John) Lellinger
p	Thelypteridaceae	Thelypteris	interrupta		(Willd.) Iwatsuki
p	Thelypteridaceae	Thelypteris	kunthii		(Desv.) Morton
p	Thelypteridaceae	Thelypteris	palustris Schott	var. pubescens	(G. Lawson) Fern
p	Vittariaceae	Vittaria	lineata		(L.) J. Smith
g	Cupressaceae	Juniperus	virginiana L.	var. silicicola	(Small) E. Murray
g	Cupressaceae	Taxodium	ascendens		Brongn.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
g	Pinaceae	Pinus	clausa		(Chapm. ex Englm.) Vasey ex Sarg.
g	Pinaceae	Pinus	elliottii Engelm.	var. densa	Little and Dorman
g	Pinaceae	Pinus	palustris		Mill.
g	Pinaceae	Pinus	serotina		Michx.
g	Podocarpaceae	Podocarpus	macrophyllus D. Don	var. maki	Endl.
g	Podocarpaceae	Podocarpus	nagi		Makino
g	Zamiaceae	Cycas	revoluta		Thunb.
g	Zamiaceae	Zamia	pumila		L.
a	Acanthaceae	Asystasia	gangetica		(L.) T. Anders
a	Acanthaceae	Dicliptera	sexangularis		(L.) Juss.
a	Acanthaceae	Justicia	brandegeana		Wassh. & L.B. Smith
a	Acanthaceae	Odontonema	tubiforme		(Bertol.) Kuntz
a	Acanthaceae	Ruellia	brittoniana		Leonard ex Fern.
a	Acanthaceae	Ruellia	caroliniensis		(J. F. Gmel.) Steud.
a	Acanthaceae	Thunbergia	alata		Bojer ex Sims
a	Acanthaceae	Thunbergia	fragrans		Roxb.
a	Aceraceae	Acer	negundo		L.
a	Aceraceae	Acer	rubrum		L.
a	Agavaceae	Agave	decipiens		Baker
a	Agavaceae	Agave	sisalana		Perrine
a	Agavaceae	Sansevieria	hyacinthoides		(L.) Druce
a	Agavaceae	Yucca	aloifolia		L.
a	Agavaceae	Yucca	filamentosa		L.
a	Aizoaceae	Sesuvium	maritimum		(Walt.) BSP.
a	Aizoaceae	Sesuvium	portulacastrum		L.
a	Aizoaceae	Trianthema	portulacastrum		L.
a	Alismataceae	Sagittaria	filiformis		J.G. Smith
a	Alismataceae	Sagittaria	lancifolia		L.
a	Alismataceae	Sagittaria	subulata		(L.) Buch.
a	Amaranthaceae	Alternanthera	flavescens		Kunth
a	Amaranthaceae	Alternanthera	philoxeroides		(Mart.) Griesb.
a	Amaranthaceae	Amaranthus	cannabinus		(L.) Sauer
a	Amaranthaceae	Amaranthus	hybridus		L.
a	Amaranthaceae	Amaranthus	spinosus		L.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Amaranthaceae	Blutaparon	vermiculare		(L.) Mears
a	Amaranthaceae	Froelichia	floridana		(Nutt.) Moq.
a	Amaranthaceae	Gomphrena	serrata		L.
a	Amaranthaceae	Iresine	diffusa		Humb. & Bonpl. ex Willd.
a	Amaryllidaceae	Allium	cuthbertii		Small
a	Amaryllidaceae	Crinum	americanum		L.
a	Amaryllidaceae	Crinum	bulbispermum		(Burman) Milne-Redhead & Schweickt
a	Amaryllidaceae	Hymenocallis	crassifolia		Herb.
a	Amaryllidaceae	Hymenocallis	latifolia		(Mill.) Roem.
a	Amaryllidaceae	Hymenocallis	palmeri		S. Wats.
a	Anacardiaceae	Mangifera	indica		L.
a	Anacardiaceae	Rhus	copallina		L.
a	Anacardiaceae	Schinus	terebinthifolius		Raddi
a	Anacardiaceae	Toxicodendron	radicans		(L.) Kuntze
a	Annonaceae	Annona	glabra		L.
a	Annonaceae	Asimina	obovata		(Willd.) Nash
a	Annonaceae	Asimina	parviflora		(Michx.) Dunal
a	Annonaceae	Asimina	pygmaea		(Bartr.) Dunal
a	Annonaceae	Asimina	reticulata		Shuttlew. ex Chapm.
a	Apiaceae	Centella	asiatica		(L.) Urban
a	Apiaceae	Cicuta	muculata		L.
a	Apiaceae	Cyclospermum	leptophyllum		(Pers.) Sprague ex Britton & Wilson
a	Apiaceae	Eryngium	aromaticum		Baldw. ex Ell.
a	Apiaceae	Eryngium	baldwinii		Spreng.
a	Apiaceae	Eryngium	yuccifolium		Michx.
a	Apiaceae	Hydrocotyle	bonariensis		Lam.
a	Apiaceae	Hydrocotyle	umbellata		L.
a	Apiaceae	Hydrocotyle	verticillata		Thunb.
a	Apiaceae	Oxypolis	filiformis		(Walt.) Britt.
a	Apiaceae	Ptilimnium	capillaceum		(Michx.) Raf.
a	Apiaceae	Sanicula	canadensis		L.
a	Apiaceae	Spermolepis	divaricata		(Walt.) Raf.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Apocynaceae	Allamanda	cathartica		L.
a	Apocynaceae	Apocynum	cannabinum		L.
a	Apocynaceae	Carissa	macrocarpa		(Eckl.) A. DC.
a	Apocynaceae	Catharanthus	roseus		(L.) G. Don
a	Apocynaceae	Echites	umbellata		Jacq.
a	Apocynaceae	Nerium	oleander		L.
a	Apocynaceae	Tabernaemontana	divaricata		(L.) R. Br.
a	Apocynaceae	Thevetia	peruviana		(Pers.) Schum.
a	Apocynaceae	Vinca	minor		L.
a	Aquifoliaceae	Ilex	ambigua		(Michx.) Torr.
a	Aquifoliaceae	Ilex	cassine		L.
a	Aquifoliaceae	Ilex	glabra		(L.) A. Gray
a	Aquifoliaceae	Ilex	vomitorea		Ait.
a	Araceae	Arisaema	dracontium		(L.) Schott
a	Araceae	Arisaema	triphyllum		(L.) Schott
a	Araceae	Colocasia	esculentum		(L.) Schott
a	Araceae	Peltandra	virginica		(L.) Schott & Endl.
a	Araceae	Pistia	stratiotes		L.
a	Araceae	Syngonium	podophyllum		Schott
a	Araliaceae	Tetrapanax	papyriferus		(Hook.) C. Koch
a	Arecaceae	Arecastrum	romanzoffianum		Becc.
a	Arecaceae	Cocos	nucifera		L.
a	Arecaceae	Phoenix	canariensis		Chabaud
a	Arecaceae	Phoenix	dactylifera		L.
a	Arecaceae	Phoenix	reclinata		L.
a	Arecaceae	Phoenix	sylvestris		Roxb.
a	Arecaceae	Sabal	palmetto		(Walt.) Lodd. ex Schultes
a	Arecaceae	Serenoa	repens		(Bartr.) Small
a	Arecaceae	Washingtonia	robusta		Wendl.
a	Aristolochiaceae	Aristolochia	littoralis		Parodi
a	Asclepiadaceae	Asclepias	curtissii		A. Gray
a	Asclepiadaceae	Asclepias	incarnata		L.
a	Asclepiadaceae	Asclepias	lanceolata		Walt.
a	Asclepiadaceae	Asclepias	pedicellata		Walt.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Asclepiadaceae	Asclepias	tomentosa		Ell.
a	Asclepiadaceae	Asclepias	tuberosa		L.
a	Asclepiadaceae	Cynanchum	angustifolium		Pers.
a	Asclepiadaceae	Cynanchum	scoparium		Nutt.
a	Asclepiadaceae	Matelea	gonocarpa		(Walt.) Shinnars
a	Asclepiadaceae	Morrenia	odorata		(Hook. & Arn.) Lindl.
a	Asteraceae	Acmella	oppositifolia (Lam.) Jansen	var. repens	(Walt.) R. K. Jansen
a	Asteraceae	Ambrosia	artemisiifolia		L.
a	Asteraceae	Ambrosia	hispida		Pursh
a	Asteraceae	Arnoglossum	floridana		(A. Gray) H. Rob.
a	Asteraceae	Arnoglossum	ovatum		(Walt.) H. Rob.
a	Asteraceae	Aster	carolinianus		Walt.
a	Asteraceae	Aster	dumosus		L.
a	Asteraceae	Aster	elliottii		T. & G.
a	Asteraceae	Aster	reticulatus		Pursh
a	Asteraceae	Aster	subulatus		Michx.
a	Asteraceae	Aster	tenuifolius		L.
a	Asteraceae	Aster	tortifolius		Michx.
a	Asteraceae	Baccharis	angustifolia		Michx.
a	Asteraceae	Baccharis	glomeruliflora		Pers.
a	Asteraceae	Baccharis	halimifolia		L.
a	Asteraceae	Balduina	angustifolia		(Pursh) Robins.
a	Asteraceae	Berlandiera	subacaulis		(Nutt.) Nutt.
a	Asteraceae	Bidens	alba (L.) DC.	var. radiata	(Sch.Bip.) R.E. Ballard ex Melchert
a	Asteraceae	Bidens	bipinnata		L.
a	Asteraceae	Borrichia	frutescens		(L.) DC.
a	Asteraceae	Brickellia	eupatorioides		(L.) Shinnars
a	Asteraceae	Carphephorus	corymbosus		(Nutt.) T. & G.
a	Asteraceae	Carphephorus	odoratissimus		(J.F. Gmel.) Hebert
a	Asteraceae	Carphephorus	paniculatus		(J. F. Gmel.) Hebert
a	Asteraceae	Chrysopsis	gossypina		(Michx.) Ell.
a	Asteraceae	Chrysopsis	mariana		(L.) Ell.
a	Asteraceae	Chrysopsis	scabrella		T. & G.
a	Asteraceae	Chrysopsis	subulata		Small
a	Asteraceae	Cirsium	horridulum		Michx.

Class	Family	Genus	Species	Variety	Authority
a	Asteraceae	Cirsium	nuttallii		DC.
a	Asteraceae	Conoclinium	coelestinum		(L.) DC.
a	Asteraceae	Conyza	canadensis (L.) Cronq.	var. pusilla	(Nutt.) Cronq.
a	Asteraceae	Coreopsis	gladiata		Walt.
a	Asteraceae	Coreopsis	leavenworthii		T. & G.
a	Asteraceae	Eclipta	prostrata		(L.) L.
a	Asteraceae	Elephantopus	elatus		Bertol.
a	Asteraceae	Elephantopus	tomentosus		L.
a	Asteraceae	Emilia	fosbergii		Nichols.
a	Asteraceae	Erechtites	hieracifolia		(L.) Raf.
a	Asteraceae	Erigeron	quercifolius		Lam.
a	Asteraceae	Erigeron	strigosus		Muhl.
a	Asteraceae	Erigeron	vernus		(L.) T. & G.
a	Asteraceae	Eupatorium	capillifolium		(Lam.) Small
a	Asteraceae	Eupatorium	compositifolium		Walt.
a	Asteraceae	Eupatorium	leptophyllum		DC.
a	Asteraceae	Eupatorium	mikanioides		Chapm.
a	Asteraceae	Eupatorium	mohrii		Greene
a	Asteraceae	Eupatorium	rotundifolium		L.
a	Asteraceae	Eupatorium	serotinum		Michx.
a	Asteraceae	Euthamia	caroliniana		(L.) Green ex Porter & Britton
a	Asteraceae	Euthamia	graminifolia (L.) Nutt.	var. hirtipes	(Fern.) C. & J. Taylor
a	Asteraceae	Flaveria	linearis		Lag.
a	Asteraceae	Gaillardia	pulchella		Foug.
a	Asteraceae	Gnaphalium	obtusifolium		L.
a	Asteraceae	Gnaphalium	purpureum		L.
a	Asteraceae	Helenium	amarum		(Raf.) H. Rock
a	Asteraceae	Helianthus	angustifolius		L.
a	Asteraceae	Helianthus	annuus		L.
a	Asteraceae	Helianthus	debilis		Nutt.
a	Asteraceae	Heterotheca	subaxillaris		(Lam.) Brit. & Rusby
a	Asteraceae	Hieracium	gronovii		L.
a	Asteraceae	Hieracium	megacephalon		Nash
a	Asteraceae	Iva	frutescens		L.
a	Asteraceae	Iva	imbricata		Walt.
a	Asteraceae	Iva	microcephala		Nutt.
a	Asteraceae	Krigia	virginica		(L.) Willd.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Asteraceae	Lactuca	floridana		(L.) Gaertn.
a	Asteraceae	Lactuca	graminifolia		Michx.
a	Asteraceae	Liatris	chapmanii		T. & G.
a	Asteraceae	Liatris	elegans		(Watt.) Michx.
a	Asteraceae	Liatris	gracilis		Pursh
a	Asteraceae	Liatris	graminifolia		(Walt.) Willd.
a	Asteraceae	Liatris	tenuifolia		Nutt.
a	Asteraceae	Liatris	tenuifolia Nutt.	var. quadrifolia	Chapm.
a	Asteraceae	Lygodesmia	aphylla		(Nutt.) DC.
a	Asteraceae	Melanthera	nivea		(L.) Small
a	Asteraceae	Mikania	cordifolia		(L.f.) Willd.
a	Asteraceae	Mikania	scandens		(L.) Willd.
a	Asteraceae	Palafoxia	feayi		A. Gray
a	Asteraceae	Palafoxia	integrifolia		(Nutt.) T. & G.
a	Asteraceae	Phoebanthus	grandiflora		(T. & G.) Blake
a	Asteraceae	Pityopsis	graminifolia		(Michx.) Nutt.
a	Asteraceae	Pluchea	camphorata		(L.) DC.
a	Asteraceae	Pluchea	foetida		(L.) DC.
a	Asteraceae	Pluchea	longifolia		Nash
a	Asteraceae	Pluchea	odorata		(L.) Cass.
a	Asteraceae	Pluchea	rosea		Godfrey
a	Asteraceae	Polymnia	uvedalia		(L.) L.
a	Asteraceae	Pseudogynoxys	chenopodioides		Kunth
a	Asteraceae	Pterocaulon	pycnostachyum		(Michx.) Ell.
a	Asteraceae	Pyrrhopappus	carolinianus		(Walt.) DC.
a	Asteraceae	Rudbeckia	hirta		L.
a	Asteraceae	Senecio	glabellus		Poir.
a	Asteraceae	Solidago	arguta Ait.	var. caroliniana	A. Gray
a	Asteraceae	Solidago	fistulosa		Mill.
a	Asteraceae	Solidago	gigantea		Aiton
a	Asteraceae	Solidago	odora Ait.	var. chapmanii	(A. Gray) Cronq.
a	Asteraceae	Solidago	sempervirens		L.
a	Asteraceae	Solidago	stricta		Ait.
a	Asteraceae	Solidago	tortifolia		Ell.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Asteraceae	Sonchus	asper		(L.) Hill
a	Asteraceae	Sonchus	oleraceus		L.
a	Asteraceae	Verbesina	virginica		L.
a	Asteraceae	Vernonia	angustifolia		Michx.
a	Asteraceae	Vernonia	gigantea		(Walt.) Trel. ex Branner & Coville
a	Asteraceae	Wedelia	trilobata		(L.) Hitchc.
a	Asteraceae	Xanthium	strumarium L.	var. glabratum	(DC.) Cronq.
a	Asteraceae	Youngia	japonica		(L.) DC.
a	Avicenniaceae	Avicennia	germinans		(L.) L.
a	Bataceae	Batis	maritima		L.
a	Betulaceae	Carpinus	caroliniana		Walt.
a	Bignoniaceae	Bignonia	capreolata		L.
a	Bignoniaceae	Campsis	radicans		(L.) Seem.
a	Bignoniaceae	Jacaranda	acutifolia		Humb. & Bonpl.
a	Bignoniaceae	Kigelia	pinnata		DC.
a	Bignoniaceae	Podranea	ricasoliana		(Tanfani) Sprague
a	Bignoniaceae	Pyrostegia	venusta		(Ker-Gaw.) Miers.
a	Bignoniaceae	Spathodea	campanulata		Beauv.
a	Bignoniaceae	Tecoma	capensis		(Thunb.) Lindl.
a	Bignoniaceae	Tecoma	stans		(L.) Juss.
a	Boraginaceae	Argusia	gnaphalodes		(L.) Heine
a	Boraginaceae	Heliotropium	angiospermum		Murr.
a	Boraginaceae	Heliotropium	curassavicum		L.
a	Boraginaceae	Heliotropium	polyphyllum		Lehm.
a	Boraginaceae	Tournefortia	volubilis		L.
a	Brassicaceae	Cakile	lanceolata		(Willd.) Schulz
a	Brassicaceae	Descurainia	pinnata		(Walt.) Britt.
a	Brassicaceae	Lepidium	virginicum		L.
a	Brassicaceae	Raphanus	raphanistrum		L.
a	Brassicaceae	Rorippa	floridana		Al-Shehbaz & Rollins
a	Bromeliaceae	Tillandsia	recurvata		(L.) L.
a	Bromeliaceae	Tillandsia	simulata		Small
a	Bromeliaceae	Tillandsia	usneoides		(L.) L.
a	Bromeliaceae	Tillandsia	utriculata		L.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Buddlejaceae	Buddleja	madagascariensis		Lam.
a	Buddlejaceae	Polypremum	procumbens		L.
a	Burseraceae	Bursera	simaruba		(L.) Sarg.
a	Cactaceae	Harrisia	simpsonii		Small ex Britton & Rose
a	Cactaceae	Hylocereus	undatus		(Haw.) Britton & Rose
a	Cactaceae	Opuntia	cochenillifera		(L.) Mill.
a	Cactaceae	Opuntia	humifusa		(Raf.) Raf.
a	Cactaceae	Opuntia	stricta		Haw.
a	Cactaceae	Pereskia	aculeata		Mill.
a	Cactaceae	Selenicereus	pteranthus		(Link & Otto) Britton & Rose
a	Campanulaceae	Campanula	floridana		S. Wats.
a	Campanulaceae	Lobelia	feayana		A. Gray
a	Campanulaceae	Lobelia	glandulosa		Walt.
a	Campanulaceae	Lobelia	paludosa		Nutt.
a	Campanulaceae	Lobelia	puberula		Michx.
a	Cannaceae	Canna	flaccida		Salisb.
a	Cannaceae	Canna	x generalis		Bailey
a	Capparaceae	Capparis	cynophallophora		L.
a	Capparaceae	Capparis	flexuosa		(L.) L.
a	Capparaceae	Polanisia	tenuifolia		T. & G.
a	Caprifoliaceae	Lonicera	japonica		Thunb.
a	Caprifoliaceae	Sambucus	canadensis		L.
a	Caprifoliaceae	Viburnum	obovatum		Walt.
a	Caricaceae	Carica	papaya		L.
a	Caryophyllaceae	Arenaria	lanuginosa		(Michx.) Rohrb.
a	Caryophyllaceae	Drymaria	cordata		(L.) Willd. ex Roem. & Schult.
a	Caryophyllaceae	Paronychia	americana		(Nutt.) Fenzl ex Walp.
a	Caryophyllaceae	Stellaria	media		(L.) Cyrillo
a	Caryophyllaceae	Stipulicida	setacea		Michx.
a	Casuarinaceae	Casuarina	cunninghamiana		Miq.
a	Casuarinaceae	Casuarina	equisetifolia		L. ex J.R. Forst. & G. Forst.
a	Casuarinaceae	Casuarina	glauca		Sieb. ex Spreng.
a	Ceratophyllaceae	Ceratophyllum	demersum		L.
a	Ceratophyllaceae	Ceratophyllum	muricatum		Cham.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Chenopodiaceae	Atriplex	pentandra		(Jacq.) Standl.
a	Chenopodiaceae	Chenopodium	album		L.
a	Chenopodiaceae	Chenopodium	ambrosioides		L.
a	Chenopodiaceae	Salicornia	bigelovii		Torr.
a	Chenopodiaceae	Salicornia	perennis		Mill.
a	Chenopodiaceae	Salsola	kali		L.
a	Chenopodiaceae	Suaeda	linearis		(Ell.) Moq.
a	Chrysobalanaceae	Chrysobalanus	icaco		L.
a	Chrysobalanaceae	Licania	michauxii		Prance
a	Cistaceae	Helianthemum	corymbosum		Michx.
a	Cistaceae	Helianthemum	nashii		Britt.
a	Cistaceae	Lechea	cernua		Small
a	Cistaceae	Lechea	divaricata		Shuttlew. ex Britton
a	Cistaceae	Lechea	mucronata		Raf.
a	Cistaceae	Lechea	sessiliflora		Raf.
a	Cistaceae	Lechea	torreyi		Legg. ex Britt.
a	Clusiaceae	Hypericum	cistifolium		Lam.
a	Clusiaceae	Hypericum	crux-andraea		(L.) Crantz
a	Clusiaceae	Hypericum	gentianoides		(L.) BSP.
a	Clusiaceae	Hypericum	hypericoides		(L.) Crantz
a	Clusiaceae	Hypericum	mutilum		L.
a	Clusiaceae	Hypericum	reductum		P. Adams
a	Clusiaceae	Hypericum	tetrapetalum		Lam.
a	Combretaceae	Conocarpus	erecta		L.
a	Combretaceae	Laguncularia	racemosa		Gaerth. f.
a	Combretaceae	Quisqualis	indica		L.
a	Commelinaceae	Commelina	diffusa		Burm.f.
a	Commelinaceae	Commelina	erecta		L.
a	Commelinaceae	Cuthbertia	ornata		Small
a	Commelinaceae	Murdannia	nudiflora		(L.) Brenan
a	Commelinaceae	Tradescantia	ohiensis		Raf.
a	Commelinaceae	Tradescantia	zebrina		Bosse
a	Convolvulaceae	Calystegia	sepium (L.) R. Br.	ssp. limnophila	(Greene) Brummitt
a	Convolvulaceae	Cuscuta	compacta		Juss.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Convolvulaceae	Dichondra	carolinensis		Michx.
a	Convolvulaceae	Ipomoea	alba		L.
a	Convolvulaceae	Ipomoea	cairica		(L.) Sweet
a	Convolvulaceae	Ipomoea	cordatotriloba		Dennst.
a	Convolvulaceae	Ipomoea	hederacea		Jacq.
a	Convolvulaceae	Ipomoea	hederifolia		L.
a	Convolvulaceae	Ipomoea	imperati		(Vahl) Griseb.
a	Convolvulaceae	Ipomoea	indica		(Burm. f.) Merr.
a	Convolvulaceae	Ipomoea	pandurata		(L.) G.F.W. Mey.
a	Convolvulaceae	Ipomoea	pes-caprae (L.) R. Br.	ssp. brasiliensis	(L.) Van Ooststr.
a	Convolvulaceae	Ipomoea	purpurea		(L.) Roth.
a	Convolvulaceae	Ipomoea	sagittata		Poir.
a	Convolvulaceae	Ipomoea	violacea		L.
a	Convolvulaceae	Merremia	dissecta		(Jacq.) Hall. f.
a	Cornaceae	Cornus	foemina		Mill.
a	Crassulaceae	Kalanchoe	daigremontiana		Ham. & Perr.
a	Crassulaceae	Kalanchoe	fedtschenkoi		Ham. & Perr.
a	Crassulaceae	Kalanchoe	pinnata		(Lam.) Pers.
a	Crassulaceae	Kalanchoe	tubiflora		(Harv.) Ham.
a	Cucurbitaceae	Citrullus	lanatus		(Thunb.) Mats. & Nakai.
a	Cucurbitaceae	Melothria	pendula		L.
a	Cucurbitaceae	Momordica	charantia		L.
a	Cymodoceaceae	Halodule	wrightii		Aschers
a	Cymodoceaceae	Syringodium	filiformis		Kuetz.
a	Cyperaceae	Bulbostylis	barbata		(Rottb.) Clarke
a	Cyperaceae	Bulbostylis	ciliatifolia		(Ell.) Fern.
a	Cyperaceae	Bulbostylis	stenophylla		(Ell.) Clarke
a	Cyperaceae	Carex	alata		T. & G.
a	Cyperaceae	Carex	gigantea		Rudge
a	Cyperaceae	Carex	lupulina		Muhl. ex Schkuhr
a	Cyperaceae	Cladium	jamaicense		Crantz
a	Cyperaceae	Cyperus	articulatus		L.
a	Cyperaceae	Cyperus	compressus		L.
a	Cyperaceae	Cyperus	croceus		Vahl

Appendix I. (continued).

Class ¹	Family	Genus	Species	
a	Cyperaceae	Cyperus	distinctus	Steud.
a	Cyperaceae	Cyperus	echinatus	(L.) A. W. Wood
a	Cyperaceae	Cyperus	esculentus	L.
a	Cyperaceae	Cyperus	filiculmis	Vahl
a	Cyperaceae	Cyperus	flavescens	L.
a	Cyperaceae	Cyperus	haspan	L.
a	Cyperaceae	Cyperus	ligularis	L.
a	Cyperaceae	Cyperus	odoratus	L.
a	Cyperaceae	Cyperus	pedunculatus	(R. Br.) J. Kern
a	Cyperaceae	Cyperus	planifolius	L.C. Rich.
a	Cyperaceae	Cyperus	polystachyos	Rottb.
a	Cyperaceae	Cyperus	retrorsus	Chapm.
a	Cyperaceae	Cyperus	strigosus	L.
a	Cyperaceae	Cyperus	surinamensis	Rottb.
a	Cyperaceae	Cyperus	tetragonus	Ell.
a	Cyperaceae	Eleocharis	albida	Torr.
a	Cyperaceae	Eleocharis	atropurpurea	(Retz.) Kunth
a	Cyperaceae	Eleocharis	baldwinii	(Torr.) Chapm.
a	Cyperaceae	Eleocharis	cellulosa	Torr.
a	Cyperaceae	Eleocharis	geniculata	(L.) R. & S.
a	Cyperaceae	Eleocharis	montevidensis	Kunth
a	Cyperaceae	Eleocharis	parvula	(R. & S.) Link
a	Cyperaceae	Fimbristylis	caroliniana	(Lam.) Fern.
a	Cyperaceae	Fimbristylis	cymosa	R. Br.
a	Cyperaceae	Fimbristylis	dichotoma	(L.) Vahl
a	Cyperaceae	Fimbristylis	spadicea	(L.) Vahl
a	Cyperaceae	Fuirena	scirpoidea	Michx.
a	Cyperaceae	Fuirena	squarrosa	Michx.
a	Cyperaceae	Kyllinga	brevifolia	Rottb.
a	Cyperaceae	Lipocarpa	micrantha	(Vahl) Torr.
a	Cyperaceae	Rhynchospora	caduca	Ell.
a	Cyperaceae	Rhynchospora	ciliaris	(Michx.) Mohr
a	Cyperaceae	Rhynchospora	colorata	(L.) Pfeiffer
a	Cyperaceae	Rhynchospora	debilis	Gale

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Cyperaceae	Rhynchospora	divergens		Chapm. ex M.A. Curtis
a	Cyperaceae	Rhynchospora	fascicularis		(Michx.) Vahl
a	Cyperaceae	Rhynchospora	filifolia		A. Gray
a	Cyperaceae	Rhynchospora	globularis		(Chapm.) Small
a	Cyperaceae	Rhynchospora	intermedia		(Chapm.) Britt.
a	Cyperaceae	Rhynchospora	inundata		(Oakes) Fern.
a	Cyperaceae	Rhynchospora	latifolia		(Baldw.) Thomas
a	Cyperaceae	Rhynchospora	megalocarpa		A. Gray
a	Cyperaceae	Rhynchospora	microcarpa		Baldw. ex A. Gray
a	Cyperaceae	Rhynchospora	miliacea		(Lam.) A. Gray
a	Cyperaceae	Rhynchospora	odorata		Wright ex Griseb.
a	Cyperaceae	Rhynchospora	plumosa		Ell.
a	Cyperaceae	Rhynchospora	pusilla		Chapm. ex M.A. Curtis
a	Cyperaceae	Rhynchospora	wrightiana		Boeckl.
a	Cyperaceae	Scirpus	americanus		Pers.
a	Cyperaceae	Scirpus	robustus		Pursh
a	Cyperaceae	Scirpus	tabernaemontani		C.C. Gmel.
a	Cyperaceae	Scleria	ciliata Michx.	var. pauciflora	(Muhl. ex Willd.) Kuk.
a	Cyperaceae	Scleria	oligantha		Michx.
a	Cyperaceae	Scleria	reticularis		Michx.
a	Cyperaceae	Scleria	triglomerata		Michx.
a	Cyrillaceae	Cyrilla	racemiflora		L.
a	Dioscoreaceae	Dioscorea	bulbifera		L.
a	Droseraceae	Drosera	brevifolia		Pursh
a	Droseraceae	Drosera	capillaris		Poir.
a	Ebenaceae	Diospyros	kaki		L. f.
a	Ebenaceae	Diospyros	virginiana		L.
a	Empetraceae	Ceratiola	ericoides		Michx.
a	Ericaceae	Bejaria	racemosa		Vent.
a	Ericaceae	Gaylussacia	dumosa		(Andr.) T. & G.
a	Ericaceae	Gaylussacia	frondosa		(L.) T. & G.
a	Ericaceae	Lyonia	ferruginea		(Walt.) Nutt.
a	Ericaceae	Lyonia	fruticosa		(Michx.) Torr.
a	Ericaceae	Lyonia	lucida		(Lam.) K. Koch

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Ericaceae	Monotropa	uniflora		L.
a	Ericaceae	Vaccinium	arboreum		Marsh.
a	Ericaceae	Vaccinium	darrowii		Camp.
a	Ericaceae	Vaccinium	myrsinites		Lam.
a	Ericaceae	Vaccinium	stamineum		L.
a	Eriocaulaceae	Eriocaulon	compressum		Lam.
a	Eriocaulaceae	Lachnocaulon	anceps		(Walt.) Morong
a	Eriocaulaceae	Lachnocaulon	minus		(Chapm.) Small
a	Eriocaulaceae	Syngonanthus	flavidulus		(Michx.) Ruhl.
a	Euphorbiaceae	Acalypha	gracilis		A. Gray
a	Euphorbiaceae	Acalypha	ostriifolia		Riddell
a	Euphorbiaceae	Chamaesyce	blodgettii		(Englm. ex Hitchc.) Small
a	Euphorbiaceae	Chamaesyce	bombensis		(Jacq.) Dugand
a	Euphorbiaceae	Chamaesyce	cumulicola		Small
a	Euphorbiaceae	Chamaesyce	hirta		(L.) Millsp.
a	Euphorbiaceae	Chamaesyce	hypericifolia		(L.) Millsp.
a	Euphorbiaceae	Chamaesyce	hyssopifolia		(L.) Small
a	Euphorbiaceae	Chamaesyce	maculata		(L.) Small
a	Euphorbiaceae	Chamaesyce	mesembrianthemifolia		(Jacq.) Dugand
a	Euphorbiaceae	Chamaesyce	ophthalmica		(Pers.) Burch
a	Euphorbiaceae	Chamaesyce	thymifolia		(L.) Millsp.
a	Euphorbiaceae	Cnidoscolus	stimulosus		(Michx.) Englm. & Gray
a	Euphorbiaceae	Croton	glandulosus		L.
a	Euphorbiaceae	Croton	punctatus		Jacq.
a	Euphorbiaceae	Drypetes	lateriflora		(Sw.) Krug & Urban
a	Euphorbiaceae	Euphorbia	trichotoma		HBK.
a	Euphorbiaceae	Jatropha	curcas		L.
a	Euphorbiaceae	Pedilanthus	tithymaloides (L.) Poit.	ssp. smallii	(Millsp.) Dressler
a	Euphorbiaceae	Phyllanthus	abnormis		Baill.
a	Euphorbiaceae	Phyllanthus	tenellus		Roxb.
a	Euphorbiaceae	Poinsettia	cyathophora		(Murr.) Kl. & Gke.
a	Euphorbiaceae	Poinsettia	heterophylla		(L.) Kl. & Gke.
a	Euphorbiaceae	Ricinus	communis		L.
a	Euphorbiaceae	Sapium	sebiferum		(L.) Roxb.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Euphorbiaceae	Stillingia	aquatica		Chapm.
a	Euphorbiaceae	Stillingia	sylvatica		L.
a	Euphorbiaceae	Tragia	urens		L.
a	Fabaceae	Abrus	precatorius		L.
a	Fabaceae	Acacia	farnesiana		(L.) Willd.
a	Fabaceae	Aeschynomene	americana		L.
a	Fabaceae	Albizia	julibrissin		Durazz.
a	Fabaceae	Albizia	lebbeck		(L.) Benth.
a	Fabaceae	Alysicarpus	ovalifolius		(Shum. & Thonn.) J. Leonard
a	Fabaceae	Amorpha	fruticosa		L.
a	Fabaceae	Apios	americana		Medic.
a	Fabaceae	Baptisia	lecontii		T. & G.
a	Fabaceae	Bauhinia	variegata		L.
a	Fabaceae	Caesalpinia	bonduc		(L.) Roxb.
a	Fabaceae	Canavalia	rosea		(Sw.) DC.
a	Fabaceae	Centrosema	virginianum		(L.) Benth.
a	Fabaceae	Chamaecrista	fasciculata		(Michx.) Greene
a	Fabaceae	Chamaecrista	nictitans (L.) Moench	var. aspera	(Muhl. ex Ell.) Irwin & Barneby
a	Fabaceae	Clitoria	mariana		L.
a	Fabaceae	Crotalaria	lanceolata		E. Mey.
a	Fabaceae	Crotalaria	pallida		Aiton
a	Fabaceae	Crotalaria	pumila		Ortega
a	Fabaceae	Crotalaria	retusa		L.
a	Fabaceae	Crotalaria	rotundifolia		(Walt.) Gmel.
a	Fabaceae	Crotalaria	spectabilis		Roth
a	Fabaceae	Dalbergia	ecastophyllum		(L.) Taub.
a	Fabaceae	Dalea	carnea		(Michx.) Poir.
a	Fabaceae	Dalea	feayi		(Chapm.) Barneby
a	Fabaceae	Desmodium	floridanum		Chapm.
a	Fabaceae	Desmodium	incanum		DC.
a	Fabaceae	Desmodium	paniculatum		DC.
a	Fabaceae	Desmodium	tenuifolium		T. & G.
a	Fabaceae	Desmodium	tortuosum		(Sw.) DC.
a	Fabaceae	Desmodium	triflorum		(L.) DC.

Appendix I. (continued).

Class	Family	Genus	Species	Variety	Authority
a	Fabaceae	Enterolobium	contortisiliquum		(Vell.) Morong
a	Fabaceae	Erythrina	herbacea		L.
a	Fabaceae	Galactia	elliottii		Nutt.
a	Fabaceae	Galactia	volubilis		(L.) Britt.
a	Fabaceae	Indigofera	caroliniana		Mill.
a	Fabaceae	Indigofera	hirsuta		Harv.
a	Fabaceae	Indigofera	spicata		Forsk.
a	Fabaceae	Indigofera	suffruticosa		L.
a	Fabaceae	Kummerowia	striata		(Thunb.) Schindler
a	Fabaceae	Leucaena	leucocephala		(Lam.) de Wit.
a	Fabaceae	Lupinus	diffusus		Nutt.
a	Fabaceae	Macroptilium	lathyroides		(L.) Urban
a	Fabaceae	Medicago	lupulina		L.
a	Fabaceae	Melilotus	alba		Desr.
a	Fabaceae	Melilotus	indica		(L.) All.
a	Fabaceae	Parkinsonia	aculeata		L.
a	Fabaceae	Phaseolus	polystachios		(L.) BSP.
a	Fabaceae	Phaseolus	polystachios (L.) Britton et al	var. sinuatus	(Nutt. ex Torr. & A. Gray) Marechal
a	Fabaceae	Rhynchosia	cinerea		Nash
a	Fabaceae	Rhynchosia	difformis		(Ell.) DC.
a	Fabaceae	Rhynchosia	minima		(L.) DC.
a	Fabaceae	Senna	alata		(L.) Roxb.
a	Fabaceae	Senna	obtusifolia		(L.) Irwin & Barneby
a	Fabaceae	Senna	occidentalis		(L.) Link
a	Fabaceae	Senna	pendula (Humb&Bonpl exWilld)I&	var. glabrata	(Bogel) H.S. Irwin & Barneby
a	Fabaceae	Sesbania	herbacea		(Mill.) McVaugh
a	Fabaceae	Sesbania	punicea		(Cav.) Benth.
a	Fabaceae	Sesbania	vesicaria		(Jacq.) Ell.
a	Fabaceae	Sophora	tomentosa		L.
a	Fabaceae	Strophostyles	umbellata		(Muhl. ex Willd.) Britt.
a	Fabaceae	Tephrosia	angustissima Shuttlew. ex Chapm	var. curtissii	(Small ex Rydb.) Isely
a	Fabaceae	Vicia	acutifolia		Ell.
a	Fabaceae	Vicia	floridana		S. Wats.
a	Fabaceae	Vigna	luteola		(Jacq.) Benth.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Fabaceae	Wisteria	sinensis		(Sims) Sweet
a	Fagaceae	Quercus	chapmanii		Sarg.
a	Fagaceae	Quercus	geminata		Small
a	Fagaceae	Quercus	incana		Bartr.
a	Fagaceae	Quercus	laevis		Walt.
a	Fagaceae	Quercus	laurifolia		Michx.
a	Fagaceae	Quercus	minima		(Sarg.) Small
a	Fagaceae	Quercus	myrtifolia		Willd.
a	Fagaceae	Quercus	pumila		Walt.
a	Fagaceae	Quercus	virginiana		Mill.
a	Gentianaceae	Bartonia	verna		(Michx.) Muhl.
a	Gentianaceae	Eustoma	exaltatum		(L.) Griseb.
a	Gentianaceae	Sabatia	brevifolia		Raf.
a	Gentianaceae	Sabatia	difformis		(L.) Druse
a	Gentianaceae	Sabatia	grandiflora		(A. Gray) Small
a	Gentianaceae	Sabatia	stellaris		Pursh
a	Geraniaceae	Geranium	carolinianum		L.
a	Geraniaceae	Pelargonium	hortorum		Bailey
a	Goodeniaceae	Scaevola	plumieri		(L.) Vahl
a	Haemodoraceae	Lachnanthes	caroliniana		(Lam.) Dandy
a	Haloragaceae	Proserpinaca	palustris		L.
a	Haloragaceae	Proserpinaca	pectinata		Lam.
a	Hamamelidaceae	Liquidambar	styraciflua		L.
a	Hydrocharitaceae	Halophila	engelmannii		Aschers
a	Hydrocharitaceae	Limnobium	spongia		(Bosc) Steud.
a	Hydrocharitaceae	Thalassia	testudinum		Koenig
a	Hypoxidaceae	Hypoxis	junceae		J. E. Smith
a	Iridaceae	Gladiolus	x gandavensis		Van Houtte
a	Iridaceae	Iris	hexagona		Walter
a	Iridaceae	Sisyrinchium	angustifolium		Mill.
a	Iridaceae	Sisyrinchium	nashii		Bickn.
a	Juglandaceae	Carya	aquatica		(Michx. f.) Nutt.
a	Juglandaceae	Carya	floridana		Sarg.
a	Juglandaceae	Carya	glabra		(Mill.) Sweet

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Juglandaceae	Carya	illinoensis		(Wang.) K. Koch
a	Juncaceae	Juncus	acuminatus		Michx.
a	Juncaceae	Juncus	dichotomus		Ell.
a	Juncaceae	Juncus	effusus		L.
a	Juncaceae	Juncus	marginatus		Rostk.
a	Juncaceae	Juncus	megacephalus		M.A. Curtis
a	Juncaceae	Juncus	polycephalus		Michx.
a	Juncaceae	Juncus	roemerianus		Scheele
a	Juncaceae	Juncus	scirpoides		Lam.
a	Juncaceae	Juncus	trigonocarpus		Steud.
a	Lamiaceae	Conradina	grandiflora		Small
a	Lamiaceae	Hyptis	alata		(Raf.) Shinnars
a	Lamiaceae	Hyptis	mutabilis		(A. Rich.) Briq.
a	Lamiaceae	Mentha	sp.		
a	Lamiaceae	Monarda	punctata		L.
a	Lamiaceae	Piloblephis	rigida		(Batr. ex Benth.) Raf.
a	Lamiaceae	Prunella	vulgaris		L.
a	Lamiaceae	Salvia	coccinea		Buchoz. ex Etling
a	Lamiaceae	Salvia	lyrata		L.
a	Lamiaceae	Scutellaria	integrifolia		L.
a	Lamiaceae	Teucrium	canadense		L.
a	Lamiaceae	Trichostema	dichotomum		L.
a	Lauraceae	Cassytha	filiformis		L.
a	Lauraceae	Cinnamomum	camphora		(L.) Nees & Eberm.
a	Lauraceae	Ocotea	coriacea		(L.) Fernald
a	Lauraceae	Persea	americana		Mill.
a	Lauraceae	Persea	borbonia		(L.) Spreng.
a	Lauraceae	Persea	borbonia (L.) Spreng.	var. humilis	(Nash) Koop
a	Lauraceae	Persea	palustris		(Raf.) Sarg.
a	Lemnaceae	Lemna	aequinotialis		Welw.
a	Lemnaceae	Lemna	obscura		(Austing) Daubs
a	Lemnaceae	Spirodela	polyrhiza		(L.) Schleiden
a	Lemnaceae	Spirodela	punctata		(G. F. W. Mey.) Thomps.
a	Lemnaceae	Wolffiella	gladiata		(Hegelm.) Hegelm.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Lentibulariaceae	Pinguicula	caerulea		Walt.
a	Lentibulariaceae	Pinguicula	lutea		Walt.
a	Lentibulariaceae	Pinguicula	pumila		Michx.
a	Lentibulariaceae	Utricularia	foliosa		L.
a	Lentibulariaceae	Utricularia	gibba		L.
a	Lentibulariaceae	Utricularia	inflata		Walt.
a	Lentibulariaceae	Utricularia	purpurea		Walt.
a	Lentibulariaceae	Utricularia	radiata		Small
a	Lentibulariaceae	Utricularia	subulata		L.
a	Liliaceae	Aletris	lutea		Small
a	Liliaceae	Asparagus	setaceus		(Kunth) Jessop
a	Liliaceae	Lilium	catesbaei		Walt.
a	Liliaceae	Lilium	longiflorum		Thunb.
a	Liliaceae	Schoenocaulon	dubium		(Michx.) Small
a	Loasaceae	Mentzelia	floridana		Nutt.
a	Loganiaceae	Gelsemium	sempervirens		(L.) J. St. Hil.
a	Loganiaceae	Mitreola	petiolata		(J.F. Gmel.) T. & G.
a	Loganiaceae	Mitreola	sessilifolia		(J.F. Gmel.) G. Don
a	Lythraceae	Ammannia	latifolia		L.
a	Lythraceae	Lagerstroemia	indica		L.
a	Lythraceae	Lythrum	alatum Pursh	var. lanceolatum	(Ell.) T. & G. ex Rothr.
a	Lythraceae	Lythrum	lineare		L.
a	Lythraceae	Rotala	ramosior		(L.) Koehne
a	Magnoliaceae	Magnolia	grandiflora		L.
a	Magnoliaceae	Magnolia	virginiana		L.
a	Malvaceae	Hibiscus	furcellatus		Desv.
a	Malvaceae	Hibiscus	grandiflorus		Michx.
a	Malvaceae	Hibiscus	rosa-sinensis		L.
a	Malvaceae	Hibiscus	rosa-sinensis L.	var. schizopetalus	Dyer.
a	Malvaceae	Hibiscus	tiliaceus		L.
a	Malvaceae	Kosteletzkya	virginica		(L.) Presl ex A. Gray
a	Malvaceae	Malvastrum	corchorifolium		(Desr.) Britt.
a	Malvaceae	Malvastrum	coromandelianum		(L.) Garcke
a	Malvaceae	Malvaviscus	arboreus Cav.	var. drummondii	Schery.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Malvaceae	Pavonia	spinifex		(L.) Cav.
a	Malvaceae	Sida	acuta		Burm. f.
a	Malvaceae	Sida	cordifolia		L.
a	Malvaceae	Sida	rhombifolia		L.
a	Malvaceae	Urena	lobata		L.
a	Marantaceae	Thalia	geniculata		L.
a	Melastomataceae	Rhexia	mariana		L.
a	Melastomataceae	Rhexia	nuttallii		James
a	Melastomataceae	Rhexia	petiolata		Walt.
a	Meliaceae	Melia	azedarach		L.
a	Molluginaceae	Mollugo	verticillata		L.
a	Moraceae	Broussonetia	papyrifera		(L.) Vent.
a	Moraceae	Ficus	aurea		Nutt.
a	Moraceae	Ficus	carica		L.
a	Moraceae	Ficus	elastica		Roxb.
a	Moraceae	Maclura	pomifera		(Raf.) Schneid.
a	Moraceae	Morus	alba		L.
a	Moraceae	Morus	rubra		L.
a	Musaceae	Musa	x paradisiaca		L.
a	Myricaceae	Myrica	cerifera		L.
a	Myrsinaceae	Ardisia	escallonioides		Schlecht. & Cham.
a	Myrsinaceae	Rapanea	punctata		(Lam.) Lundell
a	Myrtaceae	Eucalyptus	robusta		Smith
a	Myrtaceae	Eugenia	axillaris		(Sw.) Willd.
a	Myrtaceae	Eugenia	foetida		Pers.
a	Myrtaceae	Eugenia	uniflora		L.
a	Myrtaceae	Melaleuca	quinquenervia		(Cav.) Blake
a	Myrtaceae	Myrcianthes	fragrans		(Sw.) McVaugh
a	Myrtaceae	Psidium	cattleianum		Sabine
a	Myrtaceae	Psidium	guajava		L.
a	Myrtaceae	Syzygium	cumini		(L.) Skeels
a	Myrtaceae	Syzygium	jambos		(L.) Alston
a	Najadaceae	Najas	guadalupensis		(Spreng.) Magnus
a	Najadaceae	Najas	marina		L.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Najadaceae	Najas	wrightiana		A. Br.
a	Nyctaginaceae	Boerhavia	diffusa		L.
a	Nyctaginaceae	Bougainvillea	glabra		Choisy
a	Nyctaginaceae	Guapira	discolor		(Spreng.) Little
a	Nyctaginaceae	Mirabilis	jalapa		L.
a	Nymphaeaceae	Nuphar	lutea (L.) Sibth. & Sm.	ssp. advena	(Sol.) Kartesz & Gandhi
a	Nymphaeaceae	Nymphaea	elegans		Hook.
a	Nymphaeaceae	Nymphaea	mexicana		Zucc.
a	Nymphaeaceae	Nymphaea	odorata		Ait.
a	Olacaceae	Schoepfia	chrysophylloides		(A. Rich.) Planch.
a	Olacaceae	Ximenia	americana		L.
a	Oleaceae	Forestiera	segregata		(Jacq.) Krug & Urban
a	Oleaceae	Fraxinus	pennsylvanica		Marshall
a	Oleaceae	Jasminum	sambac		Ait.
a	Oleaceae	Ligustrum	japonicum		Thunb.
a	Oleaceae	Olea	europaea		L.
a	Oleaceae	Osmanthus	americana		(L.) Benth. & Hook. f. ex A. Gray
a	Onagraceae	Gaura	angustifolia		Michx.
a	Onagraceae	Ludwigia	alata		Ell.
a	Onagraceae	Ludwigia	arcuata		Walt.
a	Onagraceae	Ludwigia	decurrens		Walt.
a	Onagraceae	Ludwigia	hirtella		Raf.
a	Onagraceae	Ludwigia	maritima		Harper
a	Onagraceae	Ludwigia	microcarpa		Michx.
a	Onagraceae	Ludwigia	octovalvis		(Jacq.) Raven
a	Onagraceae	Ludwigia	palustris		(L.) Ell.
a	Onagraceae	Ludwigia	peruviana		(L.) Hara
a	Onagraceae	Ludwigia	repens		J.R. Forst.
a	Onagraceae	Ludwigia	suffruticosa		Walt.
a	Onagraceae	Oenothera	humifusa		Nutt.
a	Onagraceae	Oenothera	laciniata		Hill
a	Orchidaceae	Calopogon	barbatus		(Walt.) Ames
a	Orchidaceae	Calopogon	multiflorus		Lindl.
a	Orchidaceae	Calopogon	tuberosus		(L.) BSP.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Orchidaceae	Encyclia	tampensis		(Lindl.) Small
a	Orchidaceae	Epidendrum	conopseum		R. Br.
a	Orchidaceae	Eulophia	alta		(L.) Fawc. & Rendle
a	Orchidaceae	Habenaria	floribunda		Lindl.
a	Orchidaceae	Habenaria	repens		Nutt.
a	Orchidaceae	Harrisella	filiformis		(Sw.) Cogn.
a	Orchidaceae	Hexalectris	spicata		(Walt.) Barnh.
a	Orchidaceae	Malaxis	spicata		Sw.
a	Orchidaceae	Pogonia	ophioglossoides		(L.) Ker-Gaw.
a	Orchidaceae	Ponthieva	racemosa		(Walt.) Mohr
a	Orchidaceae	Pteroglossaspis	ecristata		(Fern.) Rolfe
a	Orchidaceae	Spiranthes	cernua		(L.) L.C. Rich.
a	Orchidaceae	Spiranthes	laciniata		(Small) Ames
a	Orchidaceae	Zeuxine	strateumatica		(L.) Schltr.
a	Oxalidaceae	Oxalis	corniculata		L.
a	Oxalidaceae	Oxalis	violacea		L.
a	Papaveraceae	Argemone	mexicana		L.
a	Passifloraceae	Passiflora	incarnata		L.
a	Passifloraceae	Passiflora	lutea		L.
a	Passifloraceae	Passiflora	suberosa		L.
a	Phytolaccaceae	Agdestis	clematidea		Moc. & Sesse.
a	Phytolaccaceae	Phytolacca	americana		L.
a	Phytolaccaceae	Rivina	humilis		L.
a	Piperaceae	Peperomia	humilis		A. Dietr.
a	Piperaceae	Peperomia	obtusifolia		(L.) A. Dietr.
a	Plantaginaceae	Plantago	lanceolata		L.
a	Plantaginaceae	Plantago	virginica		L.
a	Plumbaginaceae	Limonium	carolinianum		(Walt.) Britt.
a	Plumbaginaceae	Plumbago	auriculata		Lam.
a	Plumbaginaceae	Plumbago	scandens		L.
a	Poaceae	Amphicarpum	muhlenbergianum		(Shult.) Hitchc.
a	Poaceae	Andropogon	brachystachyus		Chapm.
a	Poaceae	Andropogon	floridanus		Scribn.
a	Poaceae	Andropogon	glomeratus		(Walt.) BSP.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Poaceae	Andropogon	glomeratus (Walt.) BSP.	var. glaucopsis	(Ell.) C. Mohr
a	Poaceae	Andropogon	gyrans		Ashe
a	Poaceae	Andropogon	gyrans Ashe	var. stenophyllus	(Hack.) C.S. Campb.
a	Poaceae	Andropogon	longiberbis		Hack.
a	Poaceae	Andropogon	ternarius		Michx.
a	Poaceae	Andropogon	virginicus		L.
a	Poaceae	Andropogon	virginicus L.	var. glaucus	Hack.
a	Poaceae	Aristida	beyrichiana		Trin. & Rupr.
a	Poaceae	Aristida	patula		Chapm. ex Nash
a	Poaceae	Aristida	purpurascens		Poir.
a	Poaceae	Aristida	purpurascens Poir.	var. tenuispica	(Hitcch.) Allred
a	Poaceae	Aristida	purpurascens Poir.	var. virgata	(Trin.) Allred
a	Poaceae	Aristida	spiciformis		Ell.
a	Poaceae	Arundinaria	gigantea		(Walt.) Walter ex Muhl.
a	Poaceae	Arundo	donax		L.
a	Poaceae	Axonopus	fissifolius		(Raddi) Kuhl.
a	Poaceae	Bambusa	multiplex		(Lour.) Raeusch
a	Poaceae	Bambusa	vulgaris		Schrad. ex J.C. Wendl.
a	Poaceae	Calamovilfa	curtissii		(Vasey) Scribn.
a	Poaceae	Cenchrus	echinatus		L.
a	Poaceae	Cenchrus	incertus		M.A. Curtis
a	Poaceae	Chasmanthium	laxum (L.) Yates	var. sessiliflorum	(Poir.) Wipff & S.D. Jones
a	Poaceae	Coelorachis	rugosa		(Nutt.) Nash
a	Poaceae	Cynodon	dactylon		(L.) Pers.
a	Poaceae	Dactyloctenium	aegyptium		(L.) Beauv.
a	Poaceae	Dichanthelium	aciculare		(Desv. ex Poir.) Gould & C.A. Clark
a	Poaceae	Dichanthelium	acuminatum		(Sw.) Gould & C. A. Clark
a	Poaceae	Dichanthelium	commutatum		(Schult.) Gould
a	Poaceae	Dichanthelium	dichotomum		(L.) Gould
a	Poaceae	Dichanthelium	ensifolium		(Baldwin ex Elliott) Gould
a	Poaceae	Dichanthelium	ensifolium (Bald. ex Ell.) Gould	var. breve	(Hitcch. & Chase) Hansen & Wunderlin
a	Poaceae	Dichanthelium	ensifolium (Bald. ex Ell.) Gould	var. unciphyllum	(Trin) B. F. Hansen & Wunderlin

Appendix I. (continued).

Class	Family	Genus	Species	Variety	Authority
a	Poaceae	Dichanthelium	laxiflorum		(Lam.) Gould
a	Poaceae	Dichanthelium	leucothrix		(Nash) Freckmann
a	Poaceae	Dichanthelium	ovale		(Elliott) Gould & C. A. Clark
a	Poaceae	Dichanthelium	portoricense		(Desv. ex Ham.) Hansen & Wunderlin
a	Poaceae	Dichanthelium	strigosum (Muhl ex Ell.) Freckmann	var. leucoblepharis	(Trin.) Freckmann
a	Poaceae	Dichanthelium	strigosum (Muhl ex Ell.) Freckmann	var. glabrescens	(Griseb.) Freckmann
a	Poaceae	Digitaria	ciliaris		(Retz.) Koel.
a	Poaceae	Digitaria	filiformis		(L.) Koeler
a	Poaceae	Distichlis	spicata		(L.) Greene
a	Poaceae	Echinochloa	colonom		(L.) Link
a	Poaceae	Echinochloa	crusgalli		(L.) Beauv.
a	Poaceae	Echinochloa	walteri		(Pursh) Heller
a	Poaceae	Eleusine	indica		(L.) Gaertn.
a	Poaceae	Eragrostis	ciliaris		(L.) R. Br.
a	Poaceae	Eragrostis	elliottii		S. Wats.
a	Poaceae	Eragrostis	spectabilis		(Pursh) Steud.
a	Poaceae	Eragrostis	virginica		(Zucc.) Steud.
a	Poaceae	Eremochloa	ophiuroides		(Munro) Hack.
a	Poaceae	Eriochloa	michauxii		(Poir.) Hitchc.
a	Poaceae	Eustachys	glauca		(Chapm.)
a	Poaceae	Eustachys	petraea		(Sw.) Desv.
a	Poaceae	Heteropogon	melanocarpus		(Ell.) Benth.
a	Poaceae	Imperata	cylindrica		(L.) Beauv.
a	Poaceae	Leersia	hexandra		Sw.
a	Poaceae	Leersia	virginica		Willd.
a	Poaceae	Leptochloa	fascicularis		(Lam.) A. Gray
a	Poaceae	Monanthochloa	littoralis		Englm.
a	Poaceae	Muhlenbergia	capillaris		(Lam.) Trin.
a	Poaceae	Oplismenus	hirtellus		(L.) P. Beauv.
a	Poaceae	Panicum	amarum		Ell.
a	Poaceae	Panicum	anceps		Michx.
a	Poaceae	Panicum	dichotomiflorum		Michx.
a	Poaceae	Panicum	dichotomiflorum Michx.	var. bartowense	(Scribn. & Merr.) Fernald

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Poaceae	Panicum	hemitomon		Schult.
a	Poaceae	Panicum	hians		Ell.
a	Poaceae	Panicum	maximum		Jacq.
a	Poaceae	Panicum	repens		L.
a	Poaceae	Panicum	rigidulum		Nees
a	Poaceae	Panicum	tenerum		Beyr.
a	Poaceae	Panicum	virgatum		L.
a	Poaceae	Paspalum	bifidum		(Bertol.) Nash
a	Poaceae	Paspalum	conjugatum		Berg.
a	Poaceae	Paspalum	floridanum		Michx.
a	Poaceae	Paspalum	laeve		Michx.
a	Poaceae	Paspalum	langei		(Fourn.) Nash
a	Poaceae	Paspalum	notatum Fluegge	var. sauræ	Parodi
a	Poaceae	Paspalum	plicatum		Michx.
a	Poaceae	Paspalum	praecox		Walt.
a	Poaceae	Paspalum	setaceum		Michx.
a	Poaceae	Paspalum	urvillei		Steud.
a	Poaceae	Paspalum	vaginatum		Sw.
a	Poaceae	Pennisetum	purpureum		Schum.
a	Poaceae	Phragmites	australis		(Cav.) Trin. ex Steud.
a	Poaceae	Polypogon	monspeliensis		(L.) Desf.
a	Poaceae	Rhynchelytrum	repens		(Willd.) C.E. Hubb.
a	Poaceae	Saccharum	giganteus		(Walt.) Pers.
a	Poaceae	Sacciolepis	striata		(L.) Nash
a	Poaceae	Schizachyrium	scoparium		(Michx.) Nash
a	Poaceae	Schizachyrium	scoparium (Michx) Nash	var. littorale	(Nash) Gould
a	Poaceae	Setaria	corrugata		(Ell.) Schult.
a	Poaceae	Setaria	macrosperma		(Scrib. & Merr.) Schum.
a	Poaceae	Setaria	magna		Griseb.
a	Poaceae	Setaria	parviflora		(Poir.) Kerguelen
a	Poaceae	Sorghastrum	elliottii		(Mohr) Nash
a	Poaceae	Sorghastrum	secundum		(Ell.) Nash
a	Poaceae	Sorghum	bicolor		(L.) Moench
a	Poaceae	Sorghum	halepense		(L.) Pers.

Appendix I. (continued).

Class	Family	Genus	Species	Variety	Authority
a	Poaceae	Spartina	alterniflora		Loisel.
a	Poaceae	Spartina	bakeri		Merr.
a	Poaceae	Spartina	patens		(Ait.) Muhl.
a	Poaceae	Sphenopholis	filiformis		(Chapm.) Scribn.
a	Poaceae	Sphenopholis	obtusata		(Michx.) Scribn.
a	Poaceae	Sporobolus	domingensis		(Trin.) Kunth
a	Poaceae	Sporobolus	floridanus		Chapm.
a	Poaceae	Sporobolus	indicus		(L.) R. Br.
a	Poaceae	Sporobolus	virginicus		(L.) Kunth
a	Poaceae	Stenotaphrum	secundatum		(Walt.) Kuntze
a	Poaceae	Tridens	flavus		(L.) Hitchc.
a	Poaceae	Triplasis	purpurea		(Walt.) Chapm.
a	Poaceae	Tripsacum	dactyloides		(L.) L.
a	Poaceae	Uniola	paniculata		L.
a	Poaceae	Urochloa	fasciculata		(Sw.) R.D. Webster
a	Poaceae	Urochloa	mutica		(Forssk.) Nguyen
a	Poaceae	Urochloa	subquadripara		(Trin.) R.D. Webster
a	Poaceae	Zea	mays		L.
a	Poaceae	Zoysia	matrella (L.) Merr.	var. tenuifolia	(Willd. ex Thiele) Sasaki
a	Polemoniaceae	Ipomopsis	rubra		(L.) Wherry
a	Polemoniaceae	Phlox	drummondii		Hook.
a	Polygalaceae	Polygala	balduinii		Nutt.
a	Polygalaceae	Polygala	cruciata		L.
a	Polygalaceae	Polygala	grandiflora		Walt.
a	Polygalaceae	Polygala	incarnata		L.
a	Polygalaceae	Polygala	lutea		L.
a	Polygalaceae	Polygala	nana		(Michx.) DC.
a	Polygalaceae	Polygala	polygama		Walt.
a	Polygalaceae	Polygala	rugelii		Shuttlew.
a	Polygalaceae	Polygala	setacea		Michx.
a	Polygonaceae	Antigonon	leptopus		Hook. & Arn.
a	Polygonaceae	Coccoloba	diversifolia		Jacq.
a	Polygonaceae	Coccoloba	uvifera		(L.) L.
a	Polygonaceae	Polygonella	ciliata		Meisn.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Polygonaceae	Polygonella	gracilis		(Nutt.) Meisn.
a	Polygonaceae	Polygonella	polygama		(Vent.) Englm. & A. Gray
a	Polygonaceae	Polygonum	hirsutum		Walt.
a	Polygonaceae	Polygonum	hydropiperoides		Michx.
a	Polygonaceae	Polygonum	persicaria		L.
a	Polygonaceae	Polygonum	punctatum		Ell.
a	Polygonaceae	Polygonum	setaceum		Baldw. ex Ell.
a	Polygonaceae	Rumex	pulcher		L.
a	Polygonaceae	Rumex	verticillatus		L.
a	Pontederiaceae	Eichhornia	crassipes		(Mart.) Solms
a	Pontederiaceae	Pontederia	cordata		L.
a	Portulacaceae	Portulaca	oleracea		L.
a	Portulacaceae	Portulaca	pilosa		L.
a	Primulaceae	Samolus	ebracteatus		HBK.
a	Primulaceae	Samolus	valerandi L.	ssp. parviflorus	(Raf.) Hulten
a	Proteaceae	Grevillea	robusta		A. Cunn.
a	Ranunculaceae	Clematis	baldwinii		T. & G.
a	Ranunculaceae	Clematis	crispa		L.
a	Rhamnaceae	Berchemia	scandens		(Hill) K. Koch
a	Rhamnaceae	Krugiodendron	ferreum		(Vahl) Urban
a	Rhamnaceae	Sageretia	minutiflora		(Michx.) Mohr
a	Rhizophoraceae	Rhizophora	mangle		L.
a	Rosaceae	Eriobotrya	japonica		Lindl.
a	Rosaceae	Prunus	angustifolia		Marsh.
a	Rosaceae	Prunus	caroliniana		Ait.
a	Rosaceae	Prunus	persica		(L.) Batsch
a	Rosaceae	Prunus	serotina		Ehrh.
a	Rosaceae	Pyrus	communis		L.
a	Rosaceae	Rubus	cuneifolius		Pursh
a	Rosaceae	Rubus	trivialis		Michx.
a	Rubiaceae	Cephalanthus	occidentalis		L.
a	Rubiaceae	Chiococca	alba		(L.) Hitchc.
a	Rubiaceae	Diodia	teres		Walt.
a	Rubiaceae	Diodia	virginiana		L.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Rubiaceae	Ernodea	littoralis		Sw.
a	Rubiaceae	Galium	hispidulum		Michx.
a	Rubiaceae	Galium	pilosum		Ait.
a	Rubiaceae	Galium	tinctorium		L.
a	Rubiaceae	Hedyotis	corymbosa		(L.) Lam.
a	Rubiaceae	Hedyotis	procumbens		(J.F. Gmel.) Fosberg
a	Rubiaceae	Hedyotis	uniflora		(L.) Lam.
a	Rubiaceae	Morinda	royoc		L.
a	Rubiaceae	Psychotria	nervosa		Sw.
a	Rubiaceae	Psychotria	sulzneri		Small
a	Rubiaceae	Randia	aculeata		L.
a	Rubiaceae	Richardia	brasiliensis		(Moq.) Gomez
a	Rubiaceae	Spermacoce	assurgens		Ruiz & Pavon
a	Rubiaceae	Spermacoce	verticillata		L.
a	Ruppiaceae	Ruppia	maritima		L.
a	Rutaceae	Amyris	balsamifera		L.
a	Rutaceae	Citrus	aurantium		L.
a	Rutaceae	Citrus	reticulata		Blanco
a	Rutaceae	Citrus	sinensis		(L.) Osbeck
a	Rutaceae	Citrus	x paradisi		Macf.
a	Rutaceae	Zanthoxylum	clava-herculis		L.
a	Rutaceae	Zanthoxylum	fagara		(L.) Sarg.
a	Salicaceae	Salix	babylonica		L.
a	Salicaceae	Salix	caroliniana		Michx.
a	Sapindaceae	Dodonaea	viscosa		(L.) Jacq.
a	Sapindaceae	Exothea	paniculata		(Juss.) Radlk.
a	Sapindaceae	Koelreuteria	elegans		(Seemann) A.C. Sm.
a	Sapindaceae	Litchi	chinensis		Sonn.
a	Sapindaceae	Sapindus	saponaria		L.
a	Sapotaceae	Chrysophyllum	oliviforme		L.
a	Sapotaceae	Sideroxylon	foetidissimum		Jacq.
a	Sapotaceae	Sideroxylon	reclinatum		Michx.
a	Sapotaceae	Sideroxylon	tenax		L.
a	Scrophulariaceae	Agalinis	fasciculata		(Ell.) Raf.

Appendix I. (continued).

Class	Family	Genus	Species	Variety	Authority
a	Scrophulariaceae	Agalinis	filifolia		(Nutt.) Raf.
a	Scrophulariaceae	Agalinis	linifolia		(Nutt.) Britt.
a	Scrophulariaceae	Agalinis	maritima		(Raf.) Raf.
a	Scrophulariaceae	Agalinis	setacea		(J.F. Gmel.) Raf.
a	Scrophulariaceae	Bacopa	caroliniana		(Walt.) Robins.
a	Scrophulariaceae	Bacopa	monnieri		(L.) Pennell
a	Scrophulariaceae	Buchnera	americana		L.
a	Scrophulariaceae	Gratiola	hispida		(Benth.) Pollard
a	Scrophulariaceae	Gratiola	ramosa		Walt.
a	Scrophulariaceae	Linaria	canadensis		(L.) Dum.
a	Scrophulariaceae	Linaria	floridana		Chapm.
a	Scrophulariaceae	Mecardonia	acuminata		(Walt.) Small
a	Scrophulariaceae	Micranthemum	glomeratum		(Chapm.) Shinnars
a	Scrophulariaceae	Penstemon	multiflorus		Chapm.
a	Scrophulariaceae	Russellia	equisetiformis		Schlecht. & Cham.
a	Scrophulariaceae	Scoparia	dulcis		L.
a	Scrophulariaceae	Seymeria	pectinata		Pursh
a	Simaroubaceae	Simarouba	glauca		DC.
a	Smilacaceae	Smilax	auriculata		Walt.
a	Smilacaceae	Smilax	bona-nox		L.
a	Smilacaceae	Smilax	glauca		Walt.
a	Smilacaceae	Smilax	laurifolia		L.
a	Smilacaceae	Smilax	tamnoides		L.
a	Solanaceae	Capsicum	annuum L.	var. glabrisculum	(Dunal) Heiser & Pickersgill
a	Solanaceae	Cestrum	nocturnum		L.
a	Solanaceae	Lycium	carolinianum		Walt.
a	Solanaceae	Physalis	pubescens		L.
a	Solanaceae	Physalis	walteri		Nutt.
a	Solanaceae	Solanum	americanum		Mill.
a	Solanaceae	Solanum	chenopodioides		Lam.
a	Solanaceae	Solanum	erianthum		D. Don
a	Solanaceae	Solanum	seaforthianum		Andr.
a	Sterculiaceae	Dombeya	wallichii		D. Jackson
a	Surianaceae	Suriana	maritima		L.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Turneraceae	Piriqueta	caroliniana		(Walt.) Urban
a	Typhaceae	Typha	domingensis		Pers.
a	Typhaceae	Typha	latifolia		L.
a	Ulmaceae	Celtis	laevigata		Willd.
a	Ulmaceae	Ulmus	americana		L.
a	Urticaceae	Boehmeria	cylindrica		(L.) Sw.
a	Urticaceae	Parietaria	floridana		Nutt.
a	Urticaceae	Parietaria	praetermissa		Hinton
a	Verbenaceae	Callicarpa	americana		L.
a	Verbenaceae	Citharexylum	spinosum		L.
a	Verbenaceae	Clerodendrum	indicum		(L.) Kuntze
a	Verbenaceae	Clerodendrum	speciosissimum		D'Ombra
a	Verbenaceae	Glandularia	maritima		(Small) Small
a	Verbenaceae	Glandularia	tampensis		(Nash) Small
a	Verbenaceae	Lantana	camara		L.
a	Verbenaceae	Lantana	depressa Small	var. floridana	(Moldenke) R.W. Sanders
a	Verbenaceae	Lantana	involucrata		L.
a	Verbenaceae	Lantana	montevidensis		(Spreng.) Briq.
a	Verbenaceae	Phyla	nodiflora		(L.) Greene
a	Verbenaceae	Verbena	scabra		Vahl
a	Verbenaceae	Vitex	trifolia		L.
a	Violaceae	Viola	lanceolata		L.
a	Violaceae	Viola	primulifolia		L.
a	Violaceae	Viola	sororia		Willd.
a	Viscaceae	Phoradendron	leucarpum		(Raf.) Reveal & M.C. Johnst.
a	Vitaceae	Ampelopsis	arborea		(L.) Koehne
a	Vitaceae	Cissus	trifoliata		L.
a	Vitaceae	Parthenocissus	quinquefolia		(L.) Planch.
a	Vitaceae	Vitis	aestivalis		Michx.
a	Vitaceae	Vitis	rotundifolia		Michx.
a	Vitaceae	Vitis	shuttleworthii		House
a	Xyridaceae	Xyris	brevifolia		Michx.
a	Xyridaceae	Xyris	caroliniana		Walt.
a	Xyridaceae	Xyris	elliottii		Chapm.

Appendix I. (continued).

Class ¹	Family	Genus	Species	Variety	Authority
a	Xyridaceae	Xyris	fimbriata		Ell.
a	Xyridaceae	Xyris	jupicai		Rich.
a	Xyridaceae	Xyris	smalliana		Nash
a	Zingiberaceae	Alpinia	zerumbet		(Pers.) B.L. Burtt & R.M. Sm.
a	Zygophyllaceae	Tribulus	cistoides		L.
a	Zygophyllaceae	Tribulus	terrestris		L.

¹p = Pteridophyte (ferns and fern allies), g = Gymnosperm, a = Angiosperm

Appendix II. Introduced plants in the Kennedy Space Center area flora.

Pteridophytes

Nephrolepidaceae

Nephrolepis cordifolia (L.) Presl EPPC-CI

Schizaeaceae

Lygodium microphyllum (Cav.) R. Br. EPPC-CI

Gymnosperms

Podocarpaceae

Podocarpus macrophyllus D. Don var. *maki* Endl.

Podocarpus nagi Makino

Zamiaceae

Cycas revoluta Thunb.

Angiosperms

Acanthaceae

Asystasia gangetica (L.) T. Anders EPPC-CII

Justicia brandegeana Wassh. & L.B. Smith

Odontonema tubiforme (Bertol.) Kuntze

Ruellia brittoniana Leonard ex Fern. EPPC-CI

Thunbergia alata Bojer ex Sims

Thunbergia fragrans Roxb.

Agavaceae

Agave decipiens Baker

Agave sisalana Perrine EPPC-CII

Sansevieria hyacinthoides (L.) Druce EPPC-CII

Yucca aloifolia L.

Amaranthaceae

Alternanthera philoxeroides (Mart.) Griesb. EPPC-CII

Amaranthus hybridus L.

Gomphrena serrata L.

Amaryllidaceae

Crinum bulbispermum (Burman) Milne-Redhead & Schweickt

Appendix II (continued)

Anacardiaceae

Mangifera indica L.

Schinus terebinthifolius Raddi EPPC-CI

Apiaceae

Cyclospermum leptophyllum (Pers.) Sprague ex Britton & Willson

Apocynaceae

Allamanda cathartica L.

Carissa macrocarpa (Eckl.) A. DC.

Catharanthus roseus (L.) G. Don

Nerium oleander L.

Tabernaemontana divaricata (L.) R. Br.

Thevetia peruviana (Pers.) Schum.

Vinca minor L.

Araceae

Colocasia esculentum (L.) Schott EPPC-CI

Pistia stratiotes L. EPPC-CI

Syngonium podophyllum Schott EPPC-CI

Araliaceae

Tetrapanax papyriferus (Hook.) C. Koch

Arecaceae

Arecastrum ramanzoffianum Becc.

Cocos nucifera L.

Phoenix canariensis Chabaud

Phoenix dactylifera L.

Phoenix reclinata L. EPPC-CII

Phoenix sylvestris Roxb.

Washingtonia robusta Wendl.

Aristolochiaceae

Aristolochia littoralis Parodi

Asclepiadaceae

Morrenia odorata (Hook. & Arn.) Lindl.

Asteraceae

Emilia fosbergii Nichols.

Helianthus annuus L.

Pseudogynoxys chenopodioides Kunth

Sonchus asper (L.) Hill

Appendix II (continued)

Asteraceae

- Sonchus oleraceus* L.
- Wedelia trilobata* (L.) Hitchc. EPPC-CII
- Youngia japonica* (L.) DC.

Bignoniaceae

- Jacaranda acutifolia* Humb. & Bonpl.
- Kigelia pinnata* DC.
- Podranea ricasoliana* (Tanfani) Sprague
- Pyrostegia venusta* (Ker-Gaw.) Miers.
- Spathodea campanulata* Beauv.
- Tecoma capensis* (Thunb.) Lindl.
- Tecoma stans* (L.) Juss.

Brassicaceae

- Raphanus raphanistrum* L.

Buddlejaceae

- Buddleja madagascariensis* Lam.

Cactaceae

- Hylocereus undatus* (Haw.) Britton & Rose
- Opuntia cochenillifera* (L.) Mill.
- Pereskia aculeata* Mill.
- Selenicereus pteranthus* (Link & Otto) Britton & Rose

Cannaceae

- Canna x generalis* Bailey

Caprifoliaceae

- Lonicera japonica* Thunb. EPPC-CI

Caricaceae

- Carica papaya* L.

Caryophyllaceae

- Stellaria media* (L.) Cyrillo

Casuarinaceae

- Casuarina cunninghamiana* Miq. EPPC-CII
- Casuarina equisetifolia* L. ex J.R. Forst. & G. Forst. EPPC-CI
- Casuarina glauca* Sieb. ex Spreng. EPPC-CI

Appendix II (continued)

Ceratophyllaceae

Ceratophyllum muricatum Cham.

Chenopodiaceae

Chenopodium ambrosioides L.

Salsola kali L.

Combretaceae

Quisqualis indica L.

Commelinaceae

Murdannia nudiflora (L.) Brenan

Tradescantia zebrina Bosse.

Convolvulaceae

Ipomoea cairica (L.) Sweet

Ipomoea hederacea Jacq.

Ipomoea purpurea (L.) Roth.

Merremia dissecta (Jacq.) Hall. f.

Crassulaceae

Kalanchoe daigremontiana Ham. & Perr.

Kalanchoe fedtschenkoi Ham. & Perr.

Kalanchoe pinnata (Lam.) Pers.

Kalanchoe tubiflora (Harv.) Ham.

Cucurbitaceae

Citrullus lanatus (Thunb.) Mats. & Nakai.

Momordica charantia L.

Cyperaceae

Bulbostylis barbata (Rottb.) Clarke

Cyperus esculentus L.

Kyllinga brevifolia Rottb.

Dioscoreaceae

Dioscorea bulbifera L. EPPC-CI

Ebenaceae

Diospyros kaki L. f.

Appendix II (continued)

Euphorbiaceae

- Jatropha curcas* L.
- Phyllanthus tenellus* Roxb.
- Ricinus communis* L. EPPC-CII
- Sapium sebiferum* (L.) Roxb. EPPC-CI

Fabaceae

- Abrus precatorius* L. EPPC-CI
- Albizia julibrissin* Durazz. EPPC-CI
- Albizia lebbeck* (L.) Benth. EPPC-CI
- Alysicarpus ovalifolius* (Shum. & Thonn.) J. Leonard
- Bauhinia variegata* L. EPPC-CI
- Crotalaria lanceolata* E. Mey.
- Crotalaria pallida* Aiton
- Crotalaria retusa* L.
- Crotalaria spectabilis* Roth
- Desmodium tortuosum* (Sw.) DC.
- Desmodium triflorum* (L.) DC.
- Enterolobium contortisiliquum* (Vell.) Morong
- Indigofera hirsuta* Harv.
- Indigofera spicata* Forsk.
- Indigofera suffruticosa* L.
- Kummerowia striata* (Thunb.) Schindler
- Leucaena leucocephala* (Lam.) de Wit. EPPC-CII
- Macroptilium lathyroides* (L.) Urban
- Medicago lupulina* L.
- Melilotus alba* Desr.
- Melilotus indica* (L.) All.
- Parkinsonia aculeata* L.
- Senna alata* (L.) Roxb.
- Senna occidentalis* (L.) Link
- Senna pendula* (Humb. & Bonpl. ex Willd.) H.S. Irwin & Barneby var. *glabrata* (Vogel)
- H.S. Irwin & Barneby EPPC-CI
- Sesbania punicea* (Cav.) Benth. EPPC-CII
- Wisteria sinensis* (Sims) Sweet

Geraniaceae

- Pelargonium hortorum* Bailey

Iridaceae

- Gladiolus x gandavensis* Van Houtte

Appendix II (continued)

Juglandaceae

Carya illinoensis (Wang.) K. Koch

Lamiaceae

Hyptis mutabilis (A. Rich.) Briq.

Mentha sp.

Prunella vulgaris L.

Lauraceae

Cinnamomum camphora (L.) Nees & Eberm. EPPC-CI

Persea americana Mill.

Liliaceae

Asparagus setaceus (Kunth) Jessop

Lilium longiflorum Thunb.

Lythraceae

Lagerstroemia indica L.

Malvaceae

Hibiscus rosa-sinensis L.

Hibiscus rosa-sinensis L. var. *schizopetalus* Dyer.

Hibiscus tiliaceus L. EPPC-CII

Malvastrum coromandelianum (L.) Garcke

Malvaviscus arboreus Cav. var. *drummondii* Schery.

Sida cordifolia L.

Meliaceae

Melia azedarach L.

Moraceae

Broussonetia papyrifera (L.) Vent. EPPC-CII

Ficus carica L.

Ficus elastica Roxb.

Maclura pomifera (Raf.) Schneid.

Morus alba L.

Musaceae

Musa x paradisiaca L.

Appendix II (continued)

Myrtaceae

- Eucalyptus robusta* Smith
- Eugenia uniflora* Smith EPPC-CI
- Melaleuca quinquenervia* (Cav.) Blake EPPC-CI
- Psidium cattleianum* Sabine EPPC-CI
- Psidium guajava* L. EPPC-CI
- Syzygium cumini* (L.) Skeels EPPC-CI
- Syzygium jambos* (L.) Alston EPPC-CII

Nyctaginaceae

- Bougainvillea glabra* Choisy
- Mirabilis jalapa* L.

Oleaceae

- Jasminum sambac* Ait. EPPC-CII
- Ligustrum japonicum* Thunb. EPPC-CI
- Olea europaea* L.

Onagraceae

- Ludwigia peruviana* (L.) Hara

Orchidaceae

- Zeuxine strateumatica* (L.) Schltr.

Phytolaccaceae

- Agdestis clematidea* Moc. & Sesse.

Plantaginaceae

- Plantago lanceolata* L.

Plumbaginaceae

- Plumbago auriculata* Lam.

Poaceae

- Arundo donax* L.
- Bambusa multiplex* (Lour.) Raeusch
- Bambusa vulgaris* Schrad. ex J.C. Wendl.
- Cynodon dactylon* (L.) Pers.
- Dactyloctenium aegyptium* (L.) Beauv.
- Echinochloa colonum* (L.) Link
- Echinochloa crusgalli* (L.) Beauv.
- Eleusine indica* (L.) Gaertn.
- Eragrostis ciliaris* (L.) R. Br.
- Eremochloa ophiuroides* (Munro) Hack.

Appendix II (continued)

Poaceae

- Imperata cylindrica* (L.) Beauv. EPPC-CI
- Panicum maximum* Jacq.
- Panicum repens* L. EPPC-CI
- Paspalum notatum* Fluegge var. *saurae* Parodi
- Paspalum urvillei* Steud.
- Pennisetum purpureum* Schum. EPPC-CI
- Polypogon monspeliensis* (L.) Desf.
- Rhynchelytrum repens* (Willd.) C.E. Hubb. EPPC-CII
- Sorghum bicolor* (L.) Moench
- Sorghum halepense* (L.) Pers.
- Sporobolus indicus* (L.) R. Br.
- Urochloa fasciculata* (Sw.) R.D. Webster
- Urochloa mutica* (Forssk.) R.D. Webster EPPC-CI
- Urochloa subquadripata* (Trin.) R.D. Webster
- Zea mays* L.
- Zoysia matrella* (L.) Merr. var. *tenuifolia* (Willd. ex Thiele) Sasaki

Polemoniaceae

- Phlox drummondii* Hook.

Polygonaceae

- Antigonon leptopus* Hook. & Arn. EPPC-CII
- Polygonum persicaria* L.
- Rumex pulcher* L.

Pontederiaceae

- Eichhornia crassipes* (Mart.) Solms EPPC-CI

Proteaceae

- Grevillea robusta* A. Cunn.

Rosaceae

- Eriobotrya japonica* Lindl.
- Prunus persica* (L.) Batsch
- Pyrus communis* L.

Rubiaceae

- Hedyotis corymbosa* (L.) Lam.
- Richardia brasiliensis* (Moq.) Gomez
- Spermacoce verticillata* L.

Appendic II (continued)

Rutaceae

- Citrus aurantium* L.
- Citrus reticulata* Blanco
- Citrus sinensis* (L.) Osbeck
- Citrus x paradisi* Macf.

Salicaceae

- Salix babylonica* L.

Sapindaceae

- Koelreuteria elegans* (Seemann) A.C. Sm.
- Litchi chinensis* Sonn.

Scrophulariaceae

- Russellia equisetiformis* Schlecht. & Cham.

Solanaceae

- Cestrum nocturnum* L.
- Solanum seaforthianum* Andr.

Sterculiaceae

- Dombeya wallichii* D. Jackson

Verbenaceae

- Clerodendrum indicum* (L.) Kuntze
- Clerodendrum speciosum* D'Ombraïn
- Lantana camara* L. EPPC-CI
- Lantana montevidensis* (Spreng.) Briq.
- Vitex trifolia* L.

Xyridaceae

- Xyris jupicai* Rich.

Zingiberaceae

- Alpinia zerumbet* (Pers.) B.L. Burtt & R.M. Sm.

Zygophyllaceae

- Tribulus cistoides* L.
- Tribulus terrestris* L.

Appendix III. Plants endemic or nearly endemic to Florida occurring in the Kennedy Space Center area flora.

Gymnosperms

Pinaceae

Pinus clausa (Chapm. ex Engelm.) Vasey ex Sarg.

Pinus elliottii Engelm. var. *densa* Little & Dorman

Angiosperms

Amaryllidaceae

Hymenocallis palmeri S. Wats.

Annonaceae

Asimina obovata (Willd.) Nash

Asimina reticulata Chapm.

Asclepiadaceae

Asclepias curtissii A. Gray

Asteraceae

Arnoglossum floridana (A. Gray) H. Rob.

Berlandiera subacaulis (Nutt.) Nutt.

Chrysopsis subulata Small

Coreopsis leavenworthii T. & G.

Eupatorium mikanioides Chapm.

Helianthus debilis Nutt.

Hieracium megacephalum Nash

Liatris tenuifolia Nutt. var. *quadrifolia* Chapm.

Palafoxia feayi A. Gray

Palafoxia integrifolia (Nutt.) T. & G.

Phoebanthus grandiflora (T. & G.) Blake

Pluchea longifolia Nash

Solidago odora Ait. var. *chapmanii* (A. Gray) Cronq.

Brassicaceae

Rorippa floridana Al-Shehbaz & Rollins

Bromeliaceae

Tillandsia simulata Small

Cactaceae

Harrisa simpsonii Small ex Britton & Rose

Appendix III (continued)

Campanulaceae

Campanula floridana S. Wats.

Lobelia feayana A. Gray

Cistaceae

Helianthemum nashii Britt.

Lechea cernua Small

Lechea divaricata Shuttlw. ex Britton

Commelinaceae

Cuthbertia ornata Small

Cyperaceae

Rhynchospora intermedia (Chapm.) Britt.

Euphobiaceae

Chamaesyce cumulicola Small

Fabaceae

Rhynchosia cinerea Nash

Tephrosia angustissima Shuttlew. ex Chapm. var. *curtissii* (Small ex Rydb.) Isely

Vicia floridana S. Wats.

Juglandaceae

Carya floridana Sarg.

Lamiaceae

Conradina grandiflora Small

Piloblephis rigida (Batr. ex Benth.) Raf.

Lauraceae

Persea borbonia (L.) Spreng. var. *humilis* (Nash) Koop

Poaceae

Andropogon brachystachyus Chapm.

Andropogon floridanus Scribn.

Andropogon longiberbis Hack.

Aristida patula Chapm. ex Nash

Calamovilfa curtissii (Vasey) Scribn.

Dicanthelium ensifolium (Bald. ex Ell.) Gould var. *breve* (Hitchc. & Chase) Hansen & Wunderlin

Appendix III (continued)

Polygalaceae

Polygala rugelii Shuttlew.

Polygonaceae

Polygonella ciliata Meisn.

Ranunculaceae

Clematis baldwinii T. & G.

Scrophulariaceae

Micranthemum glomeratum (Chapm.) Shinnars

Verbenaceae

Glandularia maritima (Small) Small

Glandularia tampensis (Nash) Small

Appendix IV. Bryophytes of the Kennedy Space Center area (Whittier and Miller 1975).

Musci

Amblystegium serpens (Hedw.) B.S.G. var. *juratzkanum* (Schimp.) Ren. & Card.
Amblystegium varium (Hedw.) Lindb.
Anomodon rostratus (Hedw.) Schimp.
Barbula cruegeri Sond. ex C. Muell.
Brachmenium ?systylium (C. Meull.) Jaeg. & Sauerb.
Bryum argenteum Hedw.
Bryum ?capillare Hedw.
Desmatodon sprengeli (Schw.) Williams
Entodon macropodus (Hedw.) C. Meull.
Fissidens garberi Lesq. & James
Forsstroemia trichomitria (Hedw.) Lindb.
Haplocladium microphyllum (Hedw.) Broth.
Isopterygium micans (Sw.) Broth.
Leptodictyum riparium (Hedw.) Warnst ssp. *sipho* (P. Beauv.) Grout.
Leucobryum albidum (P. Beauv.) Lindb.
Octoblepharum albidum Hedw.
Oxyrrhynchium hians (Hedw.) Loesk.
Papillaria nigrescens (Hedw.) Jaeg. & Sauerb.
Rhynchostegium serrulatum (Hedw.) Jaeg.
Sematophyllum adanatum (Michx.) E.G. Britt.
Sphagnum strictum Sull.
Syrrophodon texanus Sull.
Thuidium recognitum (Hedw.) Lindb. var. *delicatulum* (Hedw.) Warnst

Hepaticae and Anthocerotae

Anthoceros carolinianus Michx.
Cololejeunea cardiocarpa (Mont.) Steph.
Frullania kunzei (Lehm. & Lindenb.) Lehm. & Lindenb.
Frullania squarrosa (R.B.N.) Nees
Lejeunea cf. cladogyna Evans
Lejeunea flava (Sw.) Evans
Lejeunea floridana Evans
Lejeunea laetevirens Nees & Mont.
Lejeunea minutiloba Evans
Lophocolea martiana Nees
Microlejeunea ulicina (Tayl.) Evans ssp. *bullata* (Tayl.) Schust.
Odontoschisma denundatum (Nees) Dum.
Odontoschisma prostratum (Sw.) Trev.
Pallavicinia lyelli (Hook.) S.F. Gray
Radula australis Aust.
Radula obconica Sull.

Appendix IV (continued)

Hepaticae and Anthocerotae

Rectolejeunea maxonii Evans

Riccardia multifida (L.) S.F. Gray

Riccia aff. *fluitans* L.

Telaranea nematodes (Aust.) Howe

June 2002

Revised Flora and List of Threatened and Endangered
Plants for the Kennedy Space Center Area Florida

NAS10-02-001

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Unlimited

The vascular flora of the Kennedy Space Center (KSC) area was first studied in the 1970's (Sweet 1976, Poppleton et al. 1977), and the list was revised in 1990 (Schmalzer and Hinkle 1990). Nomenclatural and taxonomic changes as well as additional collections required a revision of this list. The revised list includes 1024 taxa of which 803 are native and 221 are introduced. This appears to be a substantial proportion of the regional flora. Fifty taxa are endemic or nearly endemic, a level of endemism that appears high for the east coast of Florida. Of the 221 introduced plants, twenty-six are Category I invasive exotics and fifteen are Category II invasive exotics. Thirty-eight taxa are listed as threatened, endangered, or of special concern on state lists. For some of these taxa, populations on KSC appear to be important for their regional and global survival. The bryophyte flora of the KSC area includes 23 mosses and 20 liverworts and hornworts (Whittier and Miller 1976). The lichen flora is currently unknown.

Flora, Florida, Kennedy Space Center, Threatened and Endangered
Plants, Endemics, Invasive Exotics

75

Unclassified

Unclassified

Unclassified